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Resonant Spaces: Electroacoustic Music and Ritual:
A commentary on my recent music.

Jamie Fawcus

A portfolio of original compositions and commentary submitted to the University of Huddersfield
in partial fulfilment of the requirements for the Doctor of Philosophy

August 2012

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Abstract

The following portfolio and commentary concerns music and performance works created between 2008 and 2012, and an exposition of the research, ideas, aesthetics and techniques that connect these works. I will discuss in detail the role that archaeoacoustics has played in my composition of fixed and mixed media works and how it has influenced me aesthetically in my approach to live performance. I will also explain in each instance any actual data used from various research sources, and my metaphorical interpretation of various archaeological sites and acoustic phenomena. Similarly, I will discuss the concepts of shamanism, ritual and transcendence that have influenced me, and how these concepts are expressed in my instrumental works, fixed media and live performance pieces.

List of works presented for PhD

<u>Title</u>	<u>Duration</u>	<u>Year</u>
Stoop	11'21"	2009
Fixed media work in stereo and 4-channel		
Waterworks	9'04"	2010
Live electronic work in stereo		
Essential Economics	10'43"	2010
Live electroacoustic work in stereo		
Twine	7'14"	2010
Live electroacoustic work in stereo		
Improvisation 1	6'38"	2011
Live electroacoustic work in stereo		
Improvisation 2	8'23"	2011
Live electroacoustic work in stereo		
Dec09 part1	5'41"	2009
Live electroacoustic duo work in stereo		
Dec09 part2	4'47"	2009
Live electroacoustic duo work in stereo		
Dead Flowers	4'55"	2009
Live electroacoustic duo work in stereo		
Wunder part1	6'56"	2010
Live electroacoustic duo work in stereo		
Wunder part2	6'01"	2010
Live electroacoustic duo work in stereo		
Black Box	7'46"	2011
Live electroacoustic duo work in stereo		
Resonances	14'00"	2010
Theremin and fixed media work in stereo and 4-channel		
Spirals	10'22"	2010
Saxophone quartet (s, a, t, bar) and fixed media in stereo		
Clay Tablet	5'00"	2011
Balalaika orchestra and fixed media		
Stone Paper Scissors	9'20"	2004/2012
Fixed media work in stereo		
<hr/>		
Total Duration:	2 hours 8 minutes	

Chapter 1: Background

1.1: Introduction and historical background

The following portfolio and commentary concerns music and performance works created between 2008 and 2012, and an exposition of the research, ideas, aesthetics and techniques that connect these works. This portfolio includes two electroacoustic fixed media works, five solo electronic performance works, six collaborative electronic performance works, and three works for instruments and electronics (for Theremin and fixed media, for saxophone quartet and fixed media, and for balalaika orchestra and fixed media).

In this commentary I will explain the processes and ideas behind each work, and outline the developments in my works and compositions over this four-year period.

My musical development began in the mid 1990s with my involvement in a number of experimental recording projects whilst studying philosophy at Keele University in England. My intention was to express some of the theoretical, political and aesthetic ideas that concerned me at the time and in some way explore them in a radically different way than the conventional intellectual textual or discursive academic approach. I was influenced by so-called “post-industrial” music made by groups such as Einstürzende Neubauten, Skinny Puppy, Delerium, Scorn, SPK, Test Dept. and a myriad of other groups making similar music between 1990 and 2001. I joined two others, a guitarist and a multi-instrumentalist and recording musician and formed an experimental trio. Our main focus was to create pieces of experimental music from recordings of unconventional musical sources such as field recordings, complex signal processing and feedback networks, spontaneous “happenings” (such as recording a nocturnal exploration of an abandoned factory with a portable four track tape recorder and the destruction of derelict cars, also recorded onto four track, building instruments from found objects and scrap metal and other alternative methods of making music). None of the music I made during this time has survived, but it laid the foundation for my future work.

My musical output expanded in scope and continued to develop at EMS (the Electronic Music Studios in Stockholm) after moving to Sweden in 2001. At EMS I studied and realised a number of electroacoustic works, and pursued a career as a composer of fixed media music. Much of my theoretical inspiration remained, with additional influences from my interest in shamanistic practices and ritual elements in music, and the aesthetics and approach to music I had encountered in my studies in electroacoustic music. Later, I also re-established my interest in the spontaneous

creation of sonic art and compositional processes involving interaction with other composers and musicians. Much of what I do musically is an attempt to understand why I do what I do, and simultaneously to develop a methodology for mapping the creative process through sound.

1.2: Archaeoacoustics and psychoacoustics

It is very possible that the origins of human music-making are tied up with the origins of the metaphysical concerns of humanity, the emergence of burial rites, the belief in life after death. (Hodgkinson, 1996, p.59)

My fascination with ancient monuments and sites goes back to my childhood. Places such as Avebury Ring, Stonehenge, Sutton Hoo and the myriad of smaller neolithic and bronze age remains scattered all over the U.K. have always had a certain magical quality for me. During travels in Wales or Scotland I could scarcely contain the wonder and awe I felt when stumbling across a remote passage gravesite or monolith – it felt like time travel and magic all at once. Castles, forts and constructions from later history held my fascination as well, but never to the same degree as massive stone artefacts of our early history. Perhaps it is because much more is known about the artefacts of the middle ages and later periods than those more than 2000 years old that they hold less mystery and wonder for me than the megaliths and chambers of Newgrange and Maes Howe. It is perhaps no surprise that I feel these places to be a potent stimulant to the imagination, considering we know as yet comparatively little about them and the people that built them.

Although academic opinion is varied concerning the sophistication of the early cultures that created these architectural wonders, my interest in this subject deepened considerably after seeing the Channel 4 television program ‘Stone Age Soundtracks’ (part of the ‘Secrets of the Dead’ series broadcast in the UK during 1999–2000). This program, and the following book of the same name (Devereaux, 2001), presented research and theories connected with the relatively new field of archaeoacoustics - the study of sound and acoustics in historical sites. Paul Devereux and Robert Jahn's work (Devereaux and Jahn, 1996) in particular presented hypotheses that the early European cultures that created the buildings and monuments I found so fascinating perhaps had a far more sophisticated relationship with sound and the aural world than at least the layman (myself) had previously imagined.

Archaeoacoustics is a difficult discipline to present objective evidence for, as often we have no artefacts as such to examine (acoustic properties of a site are second hand observations and not fixed temporally unlike physical objects such as ceramics, buildings, bones or papyrus). As such, the scope for interpretation is far greater than that for physical objects, though D’Errico and Lawson

(2006) have suggested possible criteria with which to evaluate architectural phenomena in archaeoacoustics. Archaeoacoustics also faces problems in terms of its interpretation – acoustic phenomena such as those occurring in so-called “whispering galleries” such as the one in the Dome of St. Paul’s cathedral in London, are most likely accidents of architecture rather than a deliberate attempt to create a sound experience (Wright, 2012). (Whispering galleries allow a person talking very quietly at a specific position to be clearly heard at another point usually at the opposite side of the room, even with high levels of background noise. The effect will also dramatically disappear should the speaker move a few inches away from the so-called sweet spot). It is difficult to establish categorically whether the acoustic properties of a building are specifically intended and factored into the architectural design, or merely happy coincidence, particularly in prehistoric and bronze age Europe - a period offering practically no written corroboration at all. Nonetheless, the thought of our early ancestors and their relationship to abstract sound is inspiring. I feel a connection to the long dead civilisations that built and used these ancient constructions, and for the last four years have used this connection and fascination as one of the main driving forces behind my musical output.

Composing music is, for me, the creation of structure and pattern. I find such patterning more interesting in the timbral domain through various variational and transformational means rather than in the tonal or harmonic domain. The psychoacoustic effect of beating and the modulation of closely related sounds or complex timbres creates for me a kind of sonic beauty that inspires and stimulates the more spiritual or abstract thoughts and emotions accessible by music. The sound effects, intentional or otherwise, observed and recorded in Newgrange, Maes Howe, Camster Round and Waylands Smithy, are for the most part sounds of this nature: echoes, standing waves, Helmholtz resonances, infrasound and vibration (Devereaux, Jahn and Ibsen, 1996. Watson, Keating, 1999). For me, such sounds create a connection between abstract music today and sounds and ritual practices from the past.

Cave paintings in France and other locations in southern Europe in particular often occur at points within a cavern where an echo, resonance or other acoustic phenomenon is particularly strong, often in physically inaccessible or difficult to reach places (Scarre, 1989) (i.e. high up on a wall that requires climbing, or annexes and cavities away from the main space of a chamber). Such locations suggest a desire on the part of the ancient artist to experience and immerse oneself in a sound environment defined by “otherness” or an abstraction or separation from “normal” sounds, a desire I feel many experience when they seek to compose music or experience abstract music in a concert environment.

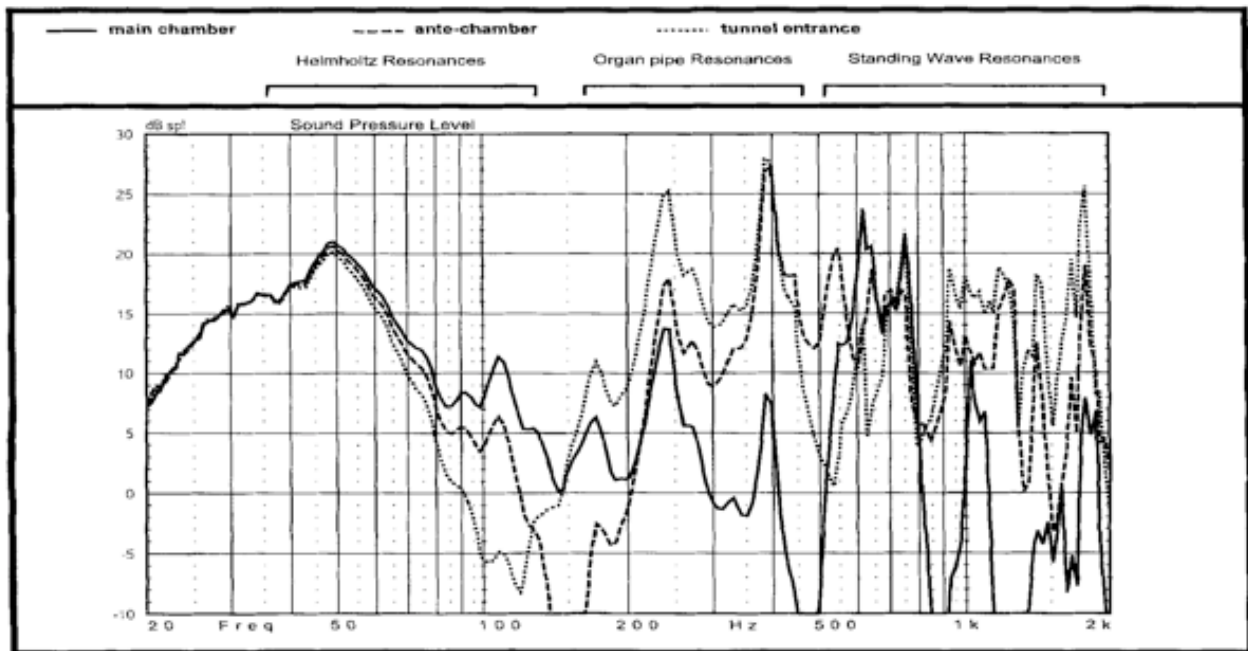


Fig.1.1: Acoustic phenomena (Helmholtz resonance, organ pipe resonance and standing waves) present in a scale model of Camster Round near Caithness in northeast Scotland observed and recorded by Watson and Keating (1999).

Fig. 1.1 shows the distribution and amplitude of a number of acoustic phenomena (Helmholtz resonance, organ pipe resonance and standing waves) present in a scale model of Camster Round near Caithness in northeast Scotland (see Fig. 1.2) observed and recorded by Watson and Keating (1999). The graph shows clearly the noticeably varied frequency response of the structure, and even given the effect of scaling the structure, the use of different building materials (in this case multi-density fibre board) and other variables, according to Watson and Keating it is reasonable to presume that ancient users of the structure would have experienced a number of unusual, disorientating and inexplicable sound effects within Camster Round. Watson and Keating along with other researchers (Devereaux and Jahn, 1996; Watson, 2006; Waller, 2006) have suggested that extremely low frequency infrasound (sound around and below 10Hz.) may be generated by strong winds blowing across the narrow opening of a passage grave (via Helmholtz resonance effects) or by strong and repetitive beating of a drum at a frequency matching the lower resonant frequencies of the tomb itself (Watson and Keating, 1999). The presence of infrasound has been linked to reported experiences of hauntings and the supernatural, likely due to vibration affecting the inner ear and body cavities, thus inducing uncomfortable, unfamiliar or inexplicable physical sensations. (Tandy, 2000; Tandy and Lawrence, 1998). Many of the enclosed stone structures studied by Jahn, Devereaux, Watson and others seem to function almost as instruments in their own right – sound experiences generated by echoes, Helmholtz resonance and standing waves render a

chamber into a sonic experience in itself. The addition of the human voice or a drum develops the sound world further still. Fig. 1.3. shows the resonant frequencies of a number of sites in the U.K. and Ireland, grouped between 99 and 112Hz. These frequencies are used in the opening of *Resonances* and reoccur throughout the piece as an over-arching theme and foundation for the theremin part to elaborate over.

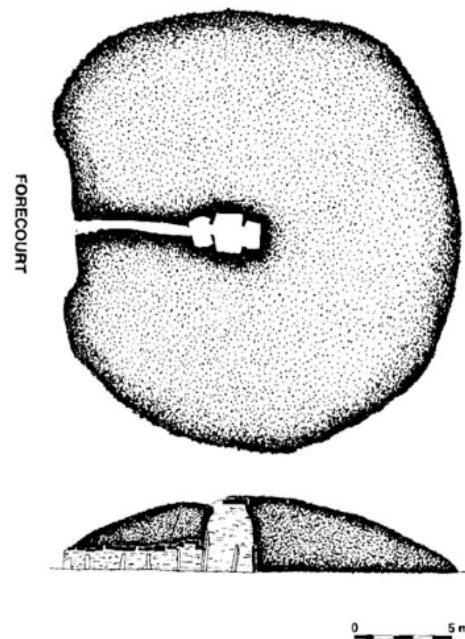


Fig1.2: Figure from Watson and Keating, 1996 – plan and elevation of the Camster Round site examined and scale-reconstructed for acoustic measurement as shown in Fig.1.1.

site	frequency
Carn Euny, Cornwall ('beehive' chamber)	99 Hz
Chun Quoit, Cornwall	110 Hz
Wayland's Smithy, Berkshire (east chamber)	112 Hz
Wayland's Smithy, Berkshire (west chamber)	95 Hz
Cairn L, Loughcrew, Co. Meath	110 Hz
Cairn I, Loughcrew, Co. Meath	112 Hz
Newgrange, Co. Meath	110 Hz

Fig. 1.3: Measurements of the strongest resonant frequencies taken from a number of ancient sites in the United Kingdom, from Devereaux and Jahn, 1996.

In my fixed media work *Stoop* (2009) I explore both the perceived and metaphorical spaces of our early ancestors and place the listener in the mind of an imagined ritual participant entering and using one of the stone structures of the European bronze age. In *Resonances* I expand these ideas still further, exploring the interaction of low frequency sounds, audible “beating” and the creation of a virtual space to allow both the listener and Theremin performer to engage and react to these

sounds. In both of these works the acoustic phenomena of early European burial chambers and the suggestion of “listening ancestors” concerned with and strongly affected by sound are used as artistic inspiration, as well as sources for sound material; from actual documented frequencies and personal experience of the spaces themselves. *Resonances* and *Stoop* are not attempts to recreate the conditions within a stone burial chamber, but are rather an exploration of those conditions, frequencies and effects as compositional tools.

The use of acoustic qualities inherent in buildings and structures in an artistic context is not new. Maryanne Amacher is a sonic artist who has exploited the acoustic properties of the spaces in which she has created installations, in order to generate “structure borne sound” where the audience’s perception of the sounds in the listening space was at least equally important as the sounds themselves. Amacher’s work was intrinsically coupled to the installation location, creating a unique synthesis of sound and place specific to each individual project. In my work the intention is to create an implied or artificial space within the musical composition itself, a meditational, ritual enclosure that can be repeated in a concert environment, leaving interpretation open to the listener. Amacher’s *Music for sound-joined rooms* series (1980-2002) used different buildings (such as the Serralves Museum, Casa de Serralves, Porto, Portugal; the Cornerhouse Gallery Manchester, England; the Galerie Nachst St. Stephan, Vienna, Austria; and the Kunsthalle, Basel, Switzerland) as sounding spaces, where careful placement of loudspeakers created soundfields and sound events that seemed to originate from the structures themselves, or from points and locations within the building, rather than specific loudspeakers (the loudspeakers were often concealed or situated outside of the listening space itself).

Iannis Xenakis’ works were very often created with a specific acoustic space in mind, and indeed his background as an architect coloured his approach to music as a spatial art form. Xenakis writes,

Music is not a language. Every musical piece is like a complex rock, formed by ridges and designs engraved within and without, that can be interpreted in a thousand different ways without a single one being the best or the most true. By virtue of this multiple exegesis, music inspires all sorts of fantastic imaginings, like a Crystal catalyst.
(Xenakis, 1982, p.261)

Renaud Meric (2011) states that Xenakis refers primarily to the conception of music outside of the restrictions of temporal/chronological construction and points more toward a spatial and immersive experience of music. Meric also proposes that electroacoustic music, although primarily a temporal art form bounded by a predetermined start and end point in time, is experienced by an audience in a more architectural manner than perhaps instrumental or orchestral music. I further suggest that

sound material need not be spatialised in order that it may be perceived as spatial or creating a space in itself. The mere fact that a composer may include artificial reverberation, delay lines or other spatial effects in a work implies an additional perceptual dimension that is to be considered alongside the temporal aspects of a piece such as linear progression, rhythm, tempo, variation, contrast and repetition.

Xenakis' music often invites the listener to suspend the traditional temporal mode of listening in favour of an immersion into the complex spectral domain as evidenced in *Concret PH* (1958) and *La Légende d'Eer* (1978). Although these two pieces differ drastically in length (*Concret PH* is around two minutes long, and *La Légende d'Eer* is forty five minutes in length) the effect on the listener is very similar (particularly when diffused over many loudspeakers). Xenakis' pieces are immersive and in the case of *La Légende d'Eer* involve long transformations across multiple timbral spaces. *La Légende d'Eer* and *Concret PH* were both works created with a specific construction and listening environment in mind, sound installations perhaps more than music. The creation of a sound installation exploring the archaeoacoustic and psychoacoustic phenomena that interest me is a possible future avenue of expression, but for me, does present a number of problems. Firstly, my interest is primarily in the creation of sound, albeit in the moment or in a fixed media work. An installation suggests sound linked or bound to a specific physical space, whereas I prefer the spaces created in my music to be "portable" and the emphasis to be on what is happening in the sound world rather than any other physical world. In my opinion people listen differently in a concert situation to that of an installation – there is a sense of occasion and ritual with a concert; it is designated in space, and also in time - there is a start and an end to a concert. If an individual is free to enter and leave the listening space at will, as with a gallery installation, then I feel the concentration of the listener to be generally lessened. A loudspeaker diffusion of a piece invites the listener to concentrate more on the temporal aspects of the sound experience as well as the timbral or spectral components. Xenakis' music in these instances is in a sense static in the installation situation, the listening experience is not bound by a start or end. In contrast I wish the listener to experience some form of audible movement, a journey in time as well as in acoustic space.

It is also interesting to note that in his various *Polytopes*, in Mycenae, Iran, Montreal and Brussels, Xenakis himself was interested in creating a kind of multi-sensoral quasi-religious event by the combination of light, sound, spectacle and architectural location or construction. Although Xenakis' main focus and interest lay in the creation and manipulation of real and virtual space (Sterken, 2001, 2009) his work displays a desire to create a transcendent experience for the listener – the creation of an abstract transformative space that overwhelms the visitor with sound, light and room;

a religious experience without religion perhaps. In common with Xenakis, I am not attempting to recreate the past in my use and reference to archaeoacoustics – I wish to create music that captures some of the essence that ancient cultures perhaps experienced, and at the same time reinvent these sonic rituals and wonder at the acoustic phenomena they involve.

1.3: Electronic music and prehistory

What have sounds, art and music created with modern technology to do with ancient monuments and people? At first glance, the answer is perhaps very little. The culture I live in is a technologically dependent, large scale, urban post-industrial society geared up to industrialised production, excess, consumption and surplus. The stone and bronze age civilisations that created Newgrange, Stonehenge, Maes Howe, and other constructions were agrarian, probably tribal or feudal, and mystical or religious in their social organisation. These worlds seem poles apart. Yet, I think there are points of connection and crossover between the experimental and electronic music world of today and prehistoric sound world. One area is the nature and use of timbre in musical instruments from both periods. Electronic music is often driven by parameters of timbre and externally referenced sound material (i.e., samples, found sound, plunderphonics and field recording) combined with synthesised and processed sound that explores complex timbres and transformations rather than more conventional notions of harmonic progression. The most universal instrument from most early world cultures is the drum, an instrument where pitch takes a secondary role to timbre and rhythm. Andrew Neher makes a number of interesting points in regards to the use of the drum:

A single beat of a drum contains many frequencies. Different sound frequencies are transmitted along different nerve pathways in the brain. Therefore the sound of a single drum should stimulate a larger area in the brain than a sound of a single frequency ... A drumbeat contains mainly low frequencies. The low frequency receptors of the ears are more resistant to damage than the delicate high frequency receptors and can withstand higher amplitudes of sound before pain is felt. Therefore, it should be possible to transmit more energy to the brain with a drum than with a stimulus of a higher frequency [...] Slightly lower frequencies may be most effective for sound stimulation, due to the presence of low frequencies (theta rhythms) in the auditory region of the cortex. (Neher, 1962, p.152)

Neher's observations are relevant for a number of reasons: firstly the drum is present in shamanistic and ritual activities all over the world, far more than any other instrument. This may be for a number of reasons; the ease of manufacture, the ease at which high amplitude sound may be achieved, the initial ease with which the drum may be played and the ability of the practitioner to perform other activities simultaneously such as singing, dancing or other ritual activities. The drum could also be used to match and communicate the heart rate and levels of excitement of the

practitioner to others in close proximity; so called sound entrainment and rhythmic driving that can possibly encourage and amplify certain mental states by matching audible signals to oscillations and divisions of various brain wave frequencies (Turow, 2005, pp.17-25; Devereaux, 2001, pp.47-54). There have been a number of studies and books written on the links between so-called trance states and rhythmic stimulus (Rouget, 1980; Neher, 1962; Turow, 2005.) and the subject has particular relevance to electronic dance music since the mid 1980s. I am less concerned with the rhythmic elements in the music I compose, though see this as a possible topic for further research and comparison. My interest lies more in the timbral, structural and metaphorical potential and possibilities inherent in speculative comparisons between ancient and modern sound and techniques. Electronic dance music has been linked to ecstatic states and religious terminology and experiences in its listeners and participants (Till, 2009) due primarily to the repetitive and possibly trance-inducing high volume beats and rhythms used, the use of narcotics and the feeling of community and identification with a culture that has been reported by its initiates. There are many parallels here with shamanism and the use of the drum in minimal technology cultures, though my interest lies in electroacoustic music and its potential links with early civilisations more than with electronic dance music and religion. Neher's comments relate to my music in particular because I use low frequency sound often as a way of bringing a physical element or presence to a concert presentation. Emphasis and energy can be transmitted within the overall structure of a piece by the use of amplified low frequency sound that is as much felt as heard by the audience. My intention with low frequencies is not to induce rhythmic entrainment in an audience, but rather to expand the gestures within a work, suggest weight, energy and impact within certain sections, and to explore the non-directional nature of these frequencies, particularly when modulated and combined such as in the opening section of *Resonances*, where sine waves in a close frequency distribution are spread out in a quadraphonic speaker array in order to create different "beating" effects and spatial disorientation in the perception of the listener.

Other instruments found in early cultures, and in nomadic and hunter-gatherer societies, such as didgeridoos, bullroarers, rattles, shakers, are similarly not pitch centric but are focused on other sound parameters. Even more sophisticated instruments such as the Loughnashae trumpa and other bronze age horns and 'brass' instruments demonstrate, after reconstruction and experimentation, a tendency towards more unconventional (in terms of western tempered musical standards) playing techniques and sound (O'Dwyer, 2004). I refer primarily to reconstructions of end and side-blown instruments made in Ireland, where the playing technique lends itself much more readily to a harmonically complex sound world more in common with a didgeridoo or mouth harp (or 'Jews' harp) than a modern brass instrument. Given the degree of craftsmanship, design and structural

elegance displayed in these instruments, the result can only be seen as a deliberate choice on the part of the constructor and/or performer.

Another parallel can be seen in surviving cultures with a hunter-gatherer or tribal basis. Music in many of these cultures (aboriginal Australia, Madagascar, Borneo, nomadic Siberia and the arctic regions) is characterised by sounds and instruments with complex overtone spectra, unconventional (in western tempered terms) tunings and approaches to pitch, and a timbral ‘footprint’ more in keeping with modern electronic forms of expression (though anthropology may present alternative interpretations). A group of didgeridoos or percussion instruments, for me, immediately brings to mind the soundscapes of electroacoustic music, or the myriad live performance electronics that proliferate particularly in Sweden such as the live performances of music by Mattias Petersson, Lars Åkerlund, Magnus Alexanderson, and Lars Bröndum (see audio bibliography for CD releases that illustrate the work of these artists). These artists together with many others demonstrate an approach to music much more based on an intuitive handling of sound than the continuation or expansion upon an established system of scales, harmony and form. Many performances I have witnessed and taken part in have, in my opinion, attempted to create hypnotic or transcendental sound experiences in both the listener and performer alike.

Having been invited to write a piece for the Stockholm Saxophone Quartet in 2009, I began *Spirals* (2010). I used a saxophone quartet as a means of illustrating the stone carvings at the king’s grave at Kivik in southern Sweden (Kiviksgraven). The carvings functioned both as an inspiration and a graphical score for the creation of the fixed media part and the mixed instructional and graphical score for the saxophone quartet. In *Spirals* the musicians are given scope to improvise and interpret both the visual and sound material to create an animated interpretation of the Kiviksgraven remnants, and in doing so, explore the essence of the culture of the time. In parts of the piece, the saxophones play traditional and improvised melodies modelled after the carvings. The instrumentalists also respond to textual instructions suggested by the carving and employ multiphonics and extended techniques in order to capture both non-instrumental sounds from nature and imitate vocal and instrumental sounds from the bronze age (such as chanting voices, overtone singing and the sound of bronze lurs and trumpas). Creating a link to the distant past is a recurring theme in my compositional research.

The Stockholm Saxophone Quartet were particularly rewarding to work with as their mastery and exploration of their instruments and willingness to experiment allowed for the mimicking and re-interpretation of many of the resonant and psychoacoustic effects observed in stone chambers

(microtonal movement, close frequency “beating” via multiphonics, noise, explosive sounds and echo effects). The quartet became for me, a kind of distorting and abstracting mirror in which the sounds of the chamber graves, the sea, sand, wind, horses and myriad other visual aspects of the Kivik tablets could be reflected and re-invented in a musical process.

Spirals demonstrates a different approach to historical material than *Stoop* and *Resonances*, both in its use of a group of acoustic instruments as opposed to purely electronic sound, and in my use of a visual reference and inspiration separate from the acoustic properties explored in the other two pieces. Although *Spirals* uses similar sounds to *Stoop* and *Resonances* in many sections, the focus is much more in a narrative or interpretation of the carved images than with a sounding space. All three of these works are ritualistic in nature, both with their invitation to the audience to listen and involve themselves in the work, and with their instructions to the performer to interpret and involve in the music as a process of concentration. *Spirals* offers the additional visual dimension to the audience as well; I distributed copies of the Kiviksgraven carvings as part of the program notes at the premiere of *Spirals*, in order that the audience might draw their own references and conclusions from my interpretation of the images, and hopefully stimulate the imagination to further appreciation of the piece.

With regard to the multitude of notational techniques I use in this piece, I am interested in the connections cited by Denis Smalley between electroacoustic music and folk-based music:

Electroacoustic music’s strength is that unlike traditional Western art music it cannot so easily suffer by being reduced to a notation system, thereby courting the danger that music writing might be regarded as a separate entity, a substitute for perceptual experience. In this regard, electroacoustic music has more in common with much orally transmitted music than with the heritage of Western art music. (Smalley: 1997, p.108)

Any notational system is for me a compromise in terms of transmitting the ideas within the composers’ head to the ears of the listener. I find fixed media work a more direct way of forming thoughts into sounds, and the involvement of a performer is for me a different process to that of the composition of a fixed media work. Working with the saxophone quartet encouraged me to think of a piece for instruments as a combination of three elements of equal importance: Firstly, the shared experience of interpreting an idea or stimulus (in the case of *Spirals*, the stone carvings from Kivik) – the composition of *Spirals* was a collaborative effort in that I used sounds in the fixed media sourced from the saxophones themselves, and asked the saxophonists to interpret instructions, prompts and sound material in their own way within various boundaries. Secondly, the inclusion of spontaneous improvisations within each performance of the piece; the score includes instructions for the performers to choose material to improvise with in different sections, and actively interpret

the electronic material with their own instrumental technique. Lastly, I wanted the piece to be able to evolve with time, and change if it needed to. I encouraged the quartet to play the piece differently depending on their mood or situation, and see the fixed media as a thin skeleton to be “fleshed out” in different ways at different times. As a result, this work, and I hope many works that I create in the future, will function as a ritualistic framework or meditational event for both performer and audience; a kind of transcendent musical experience without an attached religious or spiritual dogma – an open-ended ritual that encourages the individual to create meaning and significance in the moment herself.

Electronic music is, for me, similar to the use of sound in the prehistoric cave or megalithic construction, particularly in the relationship between the composer, her sound material and sonic tools. There is a certain directness that is common to the creation of electronic music and for manipulating the acoustic properties of a cave or building to create a soundscape or composition. Both require of the individual a range of basic skills in manipulating the sound making devices around them (shouting, singing, chanting, striking rocks or ringing stalactites contra accessing computer based music tools, triggering a sequencer, creating a feedback loop, triggering a synthesiser). Although the tools in each instance are at first glance dissimilar in terms of complexity and interaction, the manner in which they are manipulated is remarkably similar in one important respect: both involve the interaction with a compositional environment or experimental workshop of sonic possibility. Using the electronic music studio as a tool requires moving through layers of operating systems, interconnectivity, interface and normalisation (both in terms of perceived audio level and the selection and arrangement of the compositional tools). Similarly, the individual interacting with a stone chamber, particularly the natural caverns such as those in the Ariège department at the foot of the French Pyrenees must have conceivably moved through layers of perceived risk, fear of the dark, fear of wild animals and the unknown, fear of the supernatural and a myriad other factors. She may also have had to move through layers of taboo, ritual, initiation and training in order to reach a position or status in order to perform or interact with the specific space in question, as well as experimenting directly with the structures and effects they have on sound. Both *modus operandi* to me imply a spirit of exploration and experimentation rather than a period of training, repetition and rehearsal inherent in a more conventionally instrumental or musical approach. Instrumental music in a form we would recognise today no doubt existed in parallel, but what I find interesting is the notion of music or creativity with sound as a ritual process or experimental search for meaning or understanding. My need to explore the unknown drove me to experiment with electronics just as similar needs may have driven people to explore sound in acoustic spaces many thousands of years ago. The exploration of the unknown within the electronic

environment admittedly involves little risk to the composer, and probably entails less emotional intensity and ritualistic weight than an ancient ceremony or sonic exploration of a space due to the rationalised, compartmentalised and insulated nature of contemporary society, but there remains I think a spirit of exploration and wonder in the creative process, and in the creation of non-functional or art music a desire to transcend and communicate emotions and mental states indescribable in other ways. The ancient sonic explorer and contemporary composer both seek to create new worlds of sound, or access other worlds, sonic or otherwise, through their manipulation of sound.

Even in the concert environment of electroacoustic music there are direct parallels to the intent outlined above. A common method of presenting fixed media compositions is to use a multichannel surround layout of loudspeakers, either to present multichannel works or diffuse stereo works as a performance. The listener is immediately submerged into a direct listening space rather than encouraged to focus on a performer or single directed sound source. In this case the experience is that of a room or environment rather than a directional exchange between the performer and listener. Of course the conventional concert experience is often immersive in the sense of reverberation and reflection of the concert space itself, regardless of the source of the sound, but the immersive loudspeaker presentation of electroacoustic music does offer a more refined and three-dimensional experience. The listener is in a sense transported into the compositional world of the composer, and to some degree experiences the immersive quality of the sound world.

In my solo improvisations in particular (*Improvisation 1*, *Improvisation 2*, *Waterworks*, *Essential Economics*, *Twine* (2010-11)). I have created combinations of prepared digital sound material and unpredictable or partially controlled situations in order to stimulate a creative physical and mental “space” that can both inspire new forms of expression and consolidate existing methods and material. The compositional space can be entirely electronic (*Improvisation 1*, *Improvisation 2*, *Essential Economics*) with only limited physical interaction via control interfaces, or involve physical “instruments” such as metal bowls with water (*Waterworks*) or long coiled springs amplified with contact microphones (*Twine*). In both *Twine* and *Waterworks* I wanted to create and explore a sonic world generated from a single sound source and was influenced in particular by Denis Smalley’s *Tides* (1984). The version of *Waterworks* presented in this portfolio is the first attempt at a real-time live performance of an exploration of water and metallic sounds. I found water and metal to be the two strongest sonic impressions I felt when listening to *Tides*, and wanted to use these as a starting point for a performance work.

1.4: Shamanism and transcendence

When speaking about shamanism, I refer to the similar traditions and methods developed by various indigenous peoples around the globe, as studied by Rouget (1985), Harner (1968, 1980) and Price (2001) amongst others. Specifically, I am interested in the idea that music can be a shamanistic process by which the performer, and hopefully the listener can explore alternative, “higher” or altered perceptual sound worlds through a musical experience or presentation of abstract sound worlds. I use the concept and word shamanism as a compositional and performance tool without adopting the trappings, traditions or value system of any given culture. Shamanism in this instance is a process of discovery and exploration through sound that attempts to induce in a temporarily altered state of mind, concentration and perception.

In *The shaman ascending* (2004-05) Barry Truax places the listener in a circle of loudspeakers and “evokes the imagery of the traditional shaman figure chanting in the quest for spiritual ecstasy” (from sleeve notes to CD *Spirit Journeys* Cambridge street records CSR-CD0701.) In common with my pieces *Resonances* and *Stoop*, the listener is immersed in a sound world that exploits the physical pressure of sound on the listener. The sonic material for *The shaman ascending* lies predominantly in the lower midrange frequencies of the human voice, with frequencies extending at decreasing amplitudes up the frequency spectrum, perhaps mimicking the throat singing effects Truax further cites as an inspiration in the program notes for this work. *The shaman ascending* uses a pulsing, polyrhythmic form divided into what seems to be five broad sections where the music changes rhythmic pace or spectral character, whilst retaining the overall vocal formant identity. This approach reflects the rhythmic nature of much shamanic use of sound, something I have consciously avoided in an attempt to examine more pictorial and metaphorical interpretations of the subject matter. Truax’s piece powerfully and effectively creates a kind of immersive vocal sound world that overwhelms the listener with penetrating rhythmic pulses and dizzying movements of the sound material in space. The work is at the same time quite uniform in its structure and sound material, perhaps in order to create a trance inducing sound experience by exploiting gradual changes in rhythmic pace and spectral content rather than more pronounced gestures or contrasts in sound material and amplitude.

Another composer preoccupied with shamanism, whose work parallels my own, but with different sonic results, is the work of Gary Kendall, in particular his pieces *Qosqo* (2006) and *Ikaro* (2009). These works are inspired by Kendall’s experiences with South American shamanism and ritual practices. *Ikaro* uses a more gestural approach than *The shaman ascending*. In *Ikaro* Kendall explores the instruments, voices and ritual practice of the Amazonian shaman/healer Don Felipe

Collantes Sinakay and ambient sounds of the Amazonian basin environment to create a piece that is both firmly rooted in the personality and location of its subjects, and at the same time explores more abstract transformations and transitions to suggest parallel worlds or experiences in the same geophysical location. *Qosqo* is a more abstract work using synthetic textures and electronic sounds much more than *Ikaro*, and creates a sound world that is less rooted in a specific cultural tradition, leaving the experience and interpretation of the piece far more open for the individual listener. The sounds of *Qosqo* resemble bells and metallic instruments and textures, which suggest other cultural influences from Tibet, China and Japan, combined with more abstract and synthetic sounds. *Ikaro* is clearly rooted in the South American traditions; *Qosqo* is more abstracted and universal, any recorded material being transformed and absorbed into the composition with little or no unprompted reference possible to the recorded source. Kendall's approach is similar to my own in that we both use contrasts, gestural passages, and a combination of synthetic and recorded material from the "outside world". The result is music not intended to be purely acousmatic; the recorded material can be referenced to its sources and incorporated as metaphorical, or signify elements in the musical experience. I am less rooted in a specific cultural or shamanic tradition in my compositions than Kendall, and have used shamanic practice, tradition and the historical material I use as a more abstract inspiration.

Another composer inspired by shamanic practices is Rolf Enström. In his work *Tjidtjag & Tjidtjaggaise* (1987) Enström explored the shaman's journey to other worlds through ritual and in particular the use of the drum and "jojk" or traditional vocalisation practice of the Sámi people of northern Sweden, Norway and Finland. Enström used recordings made in the 1950s of Jonas Edvard Steggo, a descendant of a long line of nomadic reindeer herders from the Tjidtjag fell region in northern Sweden, as a basis for this piece, a work that begins with jojkning and simple drum beats that are transformed and manipulated into a sound journey into the shamanic spirit world. I partially imitated Enström's approach in *Stoop* and *Clay Tablet*, in that I conceived both as an audible journey from one mental state to another, a journey for an imagined ritual participant or dancer in *Stoop*, and for the musicians, conductor and audience in *Clay Tablet*. In particular *Clay Tablet* uses the progression from recognisable sounds (in this case the conventional playing techniques of the balalaika orchestra, playing defined and distinct tones) to more abstract and meditational material (unpitched or material of undefined pitch determined by the performer through instructions or guides to bounded improvisation within the score) and back again, much how *Tjidtjag & Tjidtjaggaise* moves from drum and voice to abstract and complex sound and then back to the drum and voice again. In Ingmar Stenmans' program notes to *Tjidtjag & Tjidtjaggaise* the bonds between Steggo, his family, home in the Tjidtjag fell and close relationship with nature

and the animals he tended is stressed, making *Tjidtjag & Tjidtjaggaise* as much a sonic documentary and an echo of Steggo's life as a piece of concert music. In common with Kendall's *Ikaro*, the link to the human and his belonging to a specific place is important. In my work, sense of place is less important, the "place" being created in the moment of the concert presentation of the piece, a valid approach I feel in the global culture of today where the individual's belonging is often less distinct and geographically determined. Music can create a sense of place or belonging in itself, separate from cultural and historical reference. In my music I want to create places and worlds open to a personal interpretation and belonging to the listener, art and music being perhaps the new magic, religion and shamanism that attract the curious and explorative of any background or culture. This approach is taken particularly in my performance works, and is an approach I continue to explore, develop and try to understand.

Music is often concerned with transcendence, personal religious experience and the infinite, for example, Einojuhani Rautavaara speaks of his own approaches to composition as being very personal yet concerned with larger themes:

The work of every artist can be plotted on a chart of co-ordinates with axes of time and space. But the time dimension is also 'historicist'; the whole of the past of a given culture is present, either as tradition or antitradition. In western culture we cannot escape its roots, its two fundamental pillars, which are the antique, specifically Hellenism, and Christianity, which integrated itself into it during the first millennium. (Rautavaara, 1995, p.109)

Equally, can we not escape our even earlier history and culture, our need and thirst for the unknown, transcendence and communion, and the processes that lead them to be maintained in the concert "ritual"?

1.5: Performance and Improvisation

A natural progression from my interest in shamanism and composition of fixed media works was to explore the arena of live performance, or the spontaneous creation of electronic music. This allowed me to explore the creation of music as a live "ritual" or spiritual process involving emotional intensity, risk (of making technical mistakes and exposing my ideas and methods to an audience) and elements of uncontrolled or partially steered creativity. I wanted to explore the performance as a journey or exploration of ideas and concepts outside the total control of studio composition. Contact, interaction and communication with an audience and other performers created a form of immediate acoustic feedback combined with the sonic processes I employed, allowing for techniques and results I would not ordinarily attain in fixed media composition.

I often perform solo and in collaboration with others without any form of notation or score, leaving all decisions to be made in the moment, but have at times used basic sketches or an agreed set of rules or guides in order to inspire or direct a performance. Exact notation and instructions are never used, and I would consider them a hindrance. My performances with live electronics are in many ways a practice of direct communication, in so much that the tools I use are a means to transmit ideas, moods and intellectual experiments to an audience without external mediation, though I would add that the use of the specific electronic tools I have constructed is less direct in many respects than conventional instruments such as a saxophone, guitar or the human voice, as there is far less direct physical interaction and feedback. Jean-Charles François writes,

To give a definition of the term ‘improvisation’ is a perilous matter. The three definitions most often mentioned are not able to catch the complexity of the question: a) a musical practice without notation; b) an oral practice of direct communication, in an immediate manner, without any intermediary; c) a spontaneous expression of liberated musicians.
(François, 2006, p.624)

I consider my approach to live performance and improvisation to include all three of François’ definitions, with some qualifications. I feel the live electronic medium for me is more of an interactive space where processes can be set in motion, altered, interacted with and developed. I agree with many ideas that Glen Bach outlines:

The mystical underpinnings of digital culture can be traced in laptop music by examining the metaphors of dwelling, vessel and loom. The laptop composer/performer appropriates the metaphorical avatars these forms suggest – shaman, alchemist and weaver – as inspiration and strategy. The shaman travels deep into the microscopic world of granular sound objects, and crosses and inhabits the borders between the laptop’s hard drive and its sound card. The alchemist uses various programming languages and data-bending freeware to distil, rarefy, and revive sound. The weaver spins webs of sound from the laptop loom, weaving new myths for those willing to listen, a new paradigm of intimate and authentic performance.
(Bach, 2003, p.3)

The description of the performer as “shaman, alchemist and weaver” is both useful to the audience and performer, as it provides the audience with a guide or key to listening to the performance (if needed at all), perhaps to distinguish such performances from the possible expectations and listening paradigms of the traditional instrumental performance, acousmatic loudspeaker diffusion or other forms of musical presentation. The term also gives a framework for the performer’s imagination and interaction with electronic tools; Instead of seeing the performer as an exponent of

playing technique or direct physical interaction with the instrument, this approach can encourage a conception of the electronic/laptop performer as navigator, explorer, conductor and experimenter in a sound world of their own creation. Glen Bach extends this concept suggesting that, “Music is our dreaming made audible, and laptop music presents a unique type of dreaming, one that seems more profound because of the cutting-edge technology used to create and deliver it” (Bach, 2003, pp.3-9).

Speaking specifically about laptop-based music, Bach confirms my view that technologically advanced and integrated forms of musical expression are very much connected to the mystical, magical and ritualistic cultures of history:

The laptop provides the extra-digital composer/performer with a means of undertaking profound shamanic journeys back and forth from the audible to inaudible realms, and everywhere in between. Software is the peyote that the shaman ingests to access the other world, and the intensive acts of coding and composition are part of the secret language of ecstasy. The laptop becomes a threshold, a crossing and the interzone between this world and the other.
(Bach, 2003, p.5)

This is true not only of laptop music, but also of much of what I do in a concert or performance situation. I often use physical objects or “instruments” to enhance or expand an electronic performance. Objects such as metal bowls (as used in *Waterworks*), long springs (as used in *Twine*), radio broadcasts (as used in *Improvisation I*) and other items such as large sheets of glass manipulated with the fingertips, aluminium foil and plastic chairs have all been utilised via conventional and contact microphones in order to integrate them into the electronic performance environment. Although these objects could be seen as performance instruments in the conventional sense, I see them more as stimulants and challenges that inspire me to develop or modify my ideas and approach. The intention is to explore and expand the sound palette and interaction with it, rather than master a specific performance technique or instrument. How such intention is perceived by an audience is of course subjective, and every individual may be influenced in their listening by the visual element of these objects, or equally not at all. At times I have pre-arranged a network of signal processes, sampled waveforms and material integrated with input from contact microphones, but without any pre-arranged object to be amplified. Instead I have approached the concert space or objects within it as an instrument in itself; taking a chair, piece of protective plastic sheeting, a stairwell or even the floor of the room as an instrument to amplify and add to the electronic instrument network, thus giving myself an extra stimulus or challenge to explore this specific new “instrument” and to give a feeling of uniqueness and meaning to just that specific moment.

My choice of instruments has both unconsciously and consciously included shamanistic elements

and links to early cultures. I am drawn to three types or approaches to sound generation – transformational signal processing, instruments with non-western and untempered tunings or pitch characteristics, and complex sound generators such as granular synthesis and feedback networks. Signal processing lends itself immediately to a transcendent or shamanistic interpretation; via digital processing, a sound or stream of sounds is transformed in a virtual space into something else. As a voice or utterance is transformed by the resonant characteristics of a stone chamber, becoming altered, even sacred, then sounds processed in the performance are changed and transcend their origins into a temporary ritual form. Sounds can be made more profound by the expansion of certain characteristics, or transformed entirely into a newer form. Transcendence, transformation and metamorphosis are important themes in shamanistic practice, and can all be achieved within signal processing space. The use of objects that have untempered tunings or complex frequency content can for me involve a form of animism; a way of perceiving and extracting form and narrative from apparently unmusical objects such as bowls, springs, chairs and other everyday objects. By amplifying and processing the sounds from these objects the physical world can be altered, expanded and heightened, combined into a sound world that synthesises the concrete and synthetic, the real and virtual worlds in a concert. Abstract sounds combine with recognisable sounds that are themselves made abstract by amplification and processing. My use of complex sound generation and synthesis methods is a further extension of these ideas, where the manipulation of a flow of grains, or a stream of complex and partially unpredictable feedback processes takes precedence over individual events or tones – the manipulation of processes as channelling or moulding of material into deliberate shapes and forms that are then transformed further in a process of continual metamorphosis.

Other performers of electronic music achieve ritualistic qualities through their performances. Artists such as Dror Feiler and Zbigniew Karkowski often use high volumes and extremely “noisy” and spectrally dense sound material in order to create a powerful impression upon the audience. In a seminar held at the Stockholm Academy of Dramatic Arts, Zbigniew Karkowski (2012.05.08) described much of his music as attempting to reach the “opposite of silence” and the dramatic, extreme and varied reactions this has on an audience. In film clips of his performances people could be seen with almost ecstatic expressions, or sitting down with their eyes closed as if in meditation, grimacing, laughing, or with looks of confusion, fear or panic on their faces. In his essay “The method is science, the aim is religion” Karkowski says the following:

For me music has a definite function. I see it as a tool for heightening consciousness, increasing intensity of the mind and ultimately a means of realizing God within ourselves. It should create and amplify the moments of greater intensity of life - the

feeling of strength and power. It should open up the sensitivity to this common force that we call God and make everybody aware of it. I believe that all the individuals who have ever created something of value did so not as inventors but as catalysts of existing forces.

(Karkowski, 1992, p.1)

Karkowski continues:

For some years now I have been interested in creating music that can be appreciated by beings without any cultural knowledge, music that could be called primordial, archetypal or ritual in the sense of the ritual as the evolution of the individual through sacred time and space. Music directed not to the intellect but to all the senses, music whose only function is the total integration of those sacred energies and forces that exist latent in all of us.

(Karkowski, 1992, p.1)

Though I agree with much of Karkowski's sentiments, I do not, however, discard the intellect as a target for the presentation of music; the intellect is a part of all of us to a greater or lesser degree, and to ignore or dismiss our collective ability to abstract, theorize, imagine and dream is, I think, a mistake. Music, for me, appeals to the intellect as much as the emotions and senses, it is always there, and as William Gibson suggests, much of our appreciation of the world, art included, is "pattern recognition" (Gibson, 2003 p.23) – human beings seek to attribute meaning and form to almost everything, and whether an artist intends this or not, it will happen. It can be argued that abandoning meaning and thought entirely is an intellectual stance in itself, as it requires a reasoning intellect to make the choice in the first place. A piece of music can appeal to the senses with its content, energy and associations, and equally to the intellect with its use of structure, difference, repetition and variation. There is no clear line drawn between an intellectual, emotional or sensual response or appreciation of music, by appealing to all three the whole does for me become greater than the sum of its parts.

The Swedish composers and performers Mats Lindström, Sören Runolf (known for Lokomotiv konkret, välfärdsorkestern VFO) Lise Lotte Norelius, Guds Söner (The sons of God; Kent Tankred - <http://www.kenttankred.se/> and Leif Elggren - <http://www.leifelggren.org/>) are examples of artists who illustrate the explorative and intuitive approach employed in much of Swedish live electronic performance. In their CD recordings (see audio bibliography), often sourced from live performances and improvisations, these performers generate audio works and multimedia spaces that are at once personal, political, communicative and abstract. Together with many other artists (such as Lars Bröndum, Magnus Alexanderson and Sachiko Hayashi, Lars Åkerlund and Mattias Petersson) and the intermedia melting pot that is Fylkingen, I have been exposed to a community of performers and creators that have further influenced my approach to live performance. Although few of these artists

explicitly cite shamanism or spirituality as elements in their work (perhaps due to the associations that can immediately be made to organised religion, cultural dogma and fixed world-views) there remains a spirit of individualism, exploration, a desire to communicate or touch others with sound and a preoccupation with abstraction and “otherness” that for me can be gathered under a definition of “shamanistic”.

To give a more concrete example of yet more artists concerned with these themes, at a concert at Fylkingen, Sweden 2012.06.02 (<http://www.fylkingen.se/node/1603> - accessed 2012.07.02) two acts presented music that illustrate a definite and deliberate ritual approach to live performance: Kristus Kut and Neizvestija demonstrate for me music that attempts to be ritual in itself, or to be the kind of music that may be imagined to be ritualistic or inducing a trancelike or religious state of mind. Both artists incorporate drones, noise, high volume sound, overlapping and repetitious forms and an overall dense and atmospheric sound world. The concert itself, and in particular the Kristus Kut performance, were rituals in themselves, with candles arranged to demarcate the ritual or performance space, instruments arranged in patterns or suspended from the ceiling on wires, low lighting, strobe effects and an impression of intense concentration, focus and heightened emotions from the performer.

Live electronics, noise music, glitch, laptop performances and many other sub-divisions of performed electronic music have existed for many years at the intermedia arts organisation Fylkingen (Fylkingen, 1993). Much of my performance practice has been influenced, positively and negatively, by the broad variety of approaches, aesthetics and personalities active at Fylkingen over the last ten years. I am aware that much of what I consider to be new, fresh and ground-breaking for me, may not be so from a wider perspective. Live performance is for me, a striving after transcendence beyond the everyday experience, an amplification or alteration of the attention, emotions and intellect. The composition of fixed media works is more of a distanced ritual observance; the creation of a fixed photographic image of a certain collection of images, concepts, processes, emotions and ideas. Performance is an on-going process. I am in the continual process of creating performance frameworks that evolve and change over time, and a recording of such a performance is a document for examination and development, but does not define the performance entirely. Performance always involves parameters and limitations, and these parameters and limitations in a way define the performance “work”, but this is only part of the picture. A live performance is dependant on situation, the state of mind of the performer (myself) and many other factors, and though many of these elements may be factored into preparations or conceptual descriptions of that performance, much is uncertain and at the mercy of chance, random elements

and situation; this is both the attraction and challenge of performing electronic music.

Chapter 2 – Commentary on the works

2.1: *Stoop*

(2009, fixed media work, 11'21")

Origins

This composition has at its core a musical speculation of the experiences of the participants of ancient rituals. Through this project I explored the possible processes and thoughts in the mind of an individual involved in the rituals that are likely to have taken place in burial chambers such as Newgrange in Ireland and Kiviksgraven in southern Sweden.

Architectural, symbolic and acoustic findings from burial chambers explored by researchers such as Paul Devereux, Robert Jahn, and Aaron Watson, point to long term regular use of these constructions not only as ossuaries and tombs, but also as religious or ritual spaces (Watson, 2006). Newgrange, the “beehive” Cairns of the Orkneys, Maes Howe, and Stonehenge amongst others, were likely built for ritual use. The acoustic properties of these sites are thought to have been used for specific visual and acoustic effects during ritual activity (Ingalls Garnet, 2005; Devereux, 2001) (even if the acoustic properties arose accidentally as an architectural by-product, it is fair to assume that they were exploited by the people that discovered them, so strong are their characteristics in response to specific sung tones and chanting). Although any suggestion of what went on in these places is speculative, it can be hypothesized from the available evidence that these activities incorporated one or more participants in repeated activity concerned with something distinct and separate from the daily routines and cycles of survival and reproduction in the ancient world. These were places of ritual, religion or mystical activity.

Two questions immediately arise: 1) What are the sounds that would have dominated the senses in such a chamber/burial site? 2) What comparable sounds from the past can be reasonably used as experimental material for exploration in the present? I suggest sounds specific only to that place or category of places, separated from sounds from the surrounding environment; namely breathing, footsteps, heartbeats and localized noises. Sounds from the outside filtered or modulated by the chamber itself will in all likelihood be different 4000 years after these sites were used – sounds from forests that no longer exist, birds and animals that are no longer part of the habitat or are now extinct can be excluded from any speculation as they would require extensive geophysical, archaeological and environmental corroboration, and besides which, would be considerably muffled by the sheer mass of the constructions themselves. The sound of human breath and footsteps within

these ritual spaces are the sounds that have most connectivity with today's sonic environment and can be expanded into something more within an artistic context. *Stoop* is an artistic response to the immediate sounds that would have reached the ears of the ritual participant within the ritual space.

Format

Up until 2009, my sole form of musical expression had been fixed media electroacoustic works composed in two-channels to begin with, then often developed into quadraphonic, five or eight channel surround sound if I felt the need to expand spatial elements in the piece. *Stoop* was the first piece written specifically with this portfolio in mind. I wanted the ability to work with and control specific sonic details that only the fixed media format offers. *Stoop* began as a two-channel work, developing into a four-channel surround version for its premiere in Huddersfield in 2010.

Sound Material

One universal element in documented rituals from cultures comparable to those of Stone Age and Bronze Age civilizations is dance, as detailed in Malm (1967, pp.7-35) Rouget (1985) Walter and Fridman (2004, pp.188-190) and Lewis-Williams (2001, pp.19-39). Dance plays an important part in the ritual activities of Australian aborigines and the shamanic rites of both Papua New Guineans and the indigenous peoples of Norway, Sweden, Finland and Russia. Even if dancing did not take place in the burial chamber itself, as the spaces are often enclosed and cramped, then given the role that dancing had in ritual ceremonies in other cultures, it can be hypothesized that dancing of some sort took place in the rituals leading up to and immediately after activities in the chambers themselves, or at least some form of measured and formalized movement by the participants. By working with a dancer/choreographer I hoped to capture some of the tension and energy of physical movement by using the sounds of dancing itself: footfalls, shuffles, scrapes, cracking joints, and breathing. To a modern visitor, the sounds within such ritual stone structure that are most striking are those in the lower frequency spectrum. *Stoop*, *Resonances* for Theremin and fixed media, and *Spirals* for saxophone quartet and fixed media are all 'bass heavy', favouring the lower frequencies as a result of my own experiences from a number of stone chambers.

After working closely with the Swedish dancer and choreographer Ulrika Wedin on the dance performance project *Abrovinkel*, a number of ideas remained clear in my mind well after the project was completed. Firstly, the feeling that the dancer's attention, focus and awareness of her physical presence, surroundings and other people seemed to alter drastically over time. Secondly, the attention of the observer, their awareness of time and physical space seemed to be altered as the performance progressed. *Abrovinkel* was my first attempt to work closely with a physical

performer, sourcing all sound material from Wedin's movements and breathing, and composing the finished work in close cooperation with Wedin in order to develop an intimate and organic synthesis of the music and movement. *Abrovinkel* contained elements of this sensation moving into trance-like states. The sound material and overall feeling of the work had ritual overtones and contained ideas later to be later developed in *Stoop*.



Fig. 2.1: Choreographer and dancer Ulrika Wedin performing *Abrovinkel* at its premier, Fylkingen, Stockholm 2008. Photo used with permission from Ulrika Wedin.



Fig. 2.2: Choreographer and dancer Ulrika Wedin performing *Abrovinkel* at its premiere, Fylkingen, Stockholm 2008. Photo used with permission from Ulrika Wedin.

Structure

In trying to convey an artistic impression of a ritualistic process the question arises of how to compose such a work? Immediate impressions of ritual dance suggest some kind of ABA form, mirroring a progression of mental states from normal, to trance-like and back to normal, represented musically by a slow overall crescendo in activity or energy reaching a peak, and then rapidly slowing down to a more sedate or subdued conclusion. Such a formal structure would also mirror the engendering of trance-like states and dancing found in many shamanistic rituals in which the metabolic rate of the participant rises to a state of excitement then falls to an exhausted, sedated but changed awareness.

I am drawn, however, to a more abstract formal structure and interpretation, both from the point of view that the sound materials lend themselves to abstraction (footsteps, muffled movement, thumps, booms, footfalls, shuffles, scrapes, cracking joints, breathing and the transformations arising from them) and due to the fact that rhythmic aspects of the ritual use of music are a whole area of study

in themselves (Rouget, 1985; Turow, 2005; Till, 2009). Recent forms of dance music using electronically generated and ordered beats still function in many musical cultures as ritualistic machinery, as mechanisms used to assist the dancers in their escapism, euphoria, social bonding and identification of identity or political beliefs (Till, 2009 pp. 3-13) More importantly, Ulrika Wedin's dance in *Abrovinkel* was in itself an abstract physical expression, not using regular measured timings or repeating moves, rather a much more flowing, pulsing movement with a diffuse and fluid rhythmic presentation. This is reflected in the recordings I made of Wedin's movements and was something I wished to maintain in the later composition of *Stoop*.

Stoop can be divided into five sections in which the relatively homogenous sound material is treated in varying ways:

Part 1: (00'00" – 02'00")

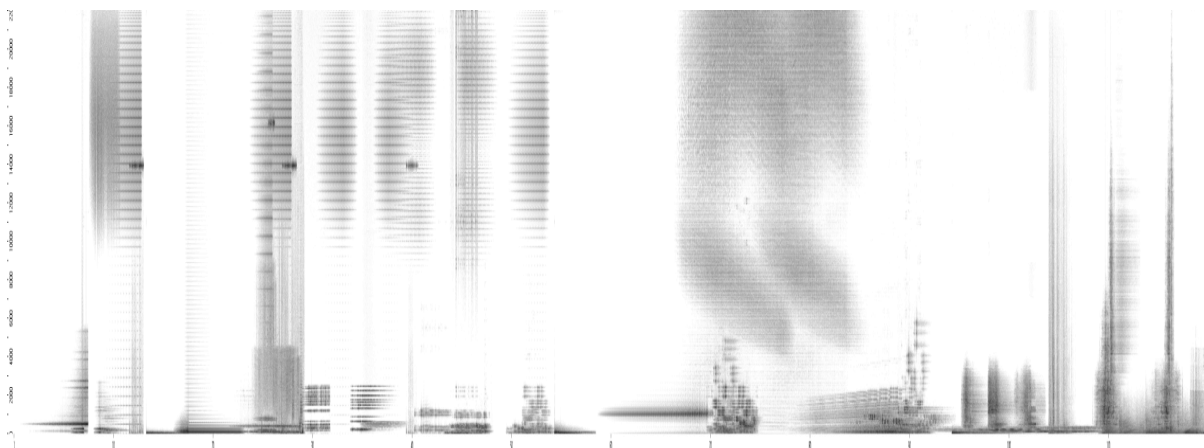


Fig. 2.3. *Stoop* sonogram 00'00" to 02'00"

The first phrases in *Stoop* (00'00" – 02'00") imply entering into a space, a sharp intake of breath and a progression into a further series of spaces. Short, breathy gestures separated by silences are used to convey a feeling of hesitation and uncertainty accompanying the dancer or agent entering a new or charged situation and an unknown physical space. Likewise, the juxtaposition of bass heavy sounds with higher frequency "ringing" is again used to accentuate changing scenes within the piece, movement into the unknown and the nervous, rapid glances of the agent or dancer. Such frequency ranges are not used as mere metaphors in a cinematic way, but are derived directly from acoustic measurements of ritual sites. Sudden and harsh textures occur to further this musical idea. The sounds themselves are treated with varying amounts of reverberation to imply a series of "rooms" of different sizes and resonant qualities – dry/wet or near/distant. The sounds of footfalls and breathing are magnified and distorted to unfamiliar shapes and levels.

Part 2: (02'00" – 04'02")

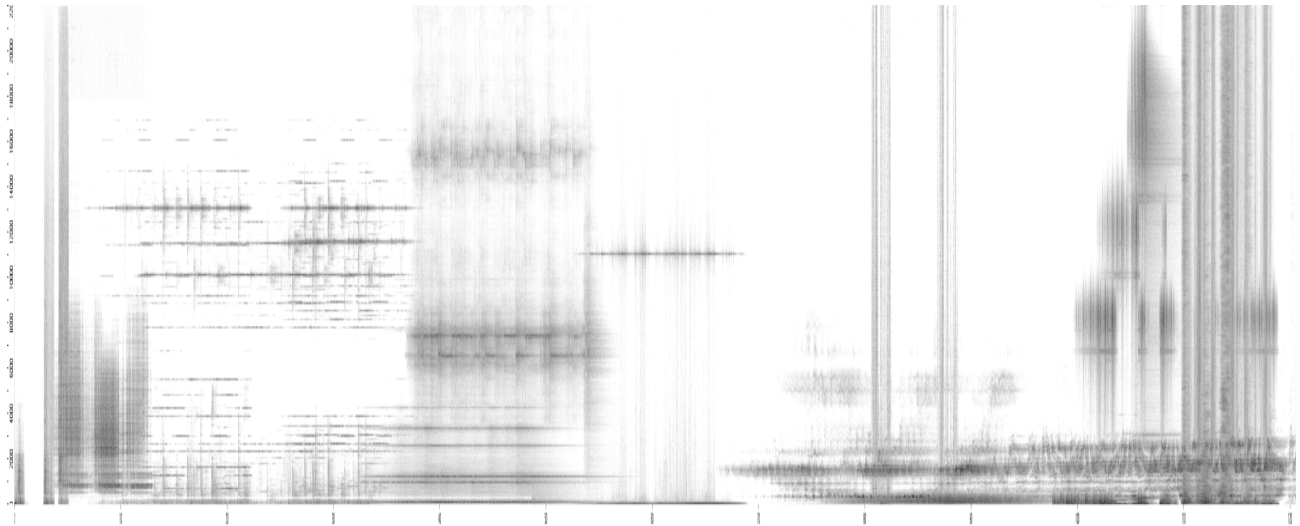


Fig. 2.4: *Stoop* sonogram 02'00" to 04'02".

The transition to the second section comprises a short sequence in which the dancer's sharp intake of breath is repeated three times (with slightly different timbral manipulations each time). In this section the sounds expand in time, becoming less abrupt, suggesting the participant's eyes becoming accustomed to low light, curiosity and a gradually altered state of consciousness. The individual is aware, but calmer. A modulated glissando is layered over sonic material reflected in previous section, but now with euphoric elements and a sense of forward movement. Sounds are allowed to develop and interact, with contrasts on a more subtle level. Hints of rhythmic activity blend with gestures that keep building up to an abrupt pause at 04'02".

Part 3: (04'02" – 04'57")

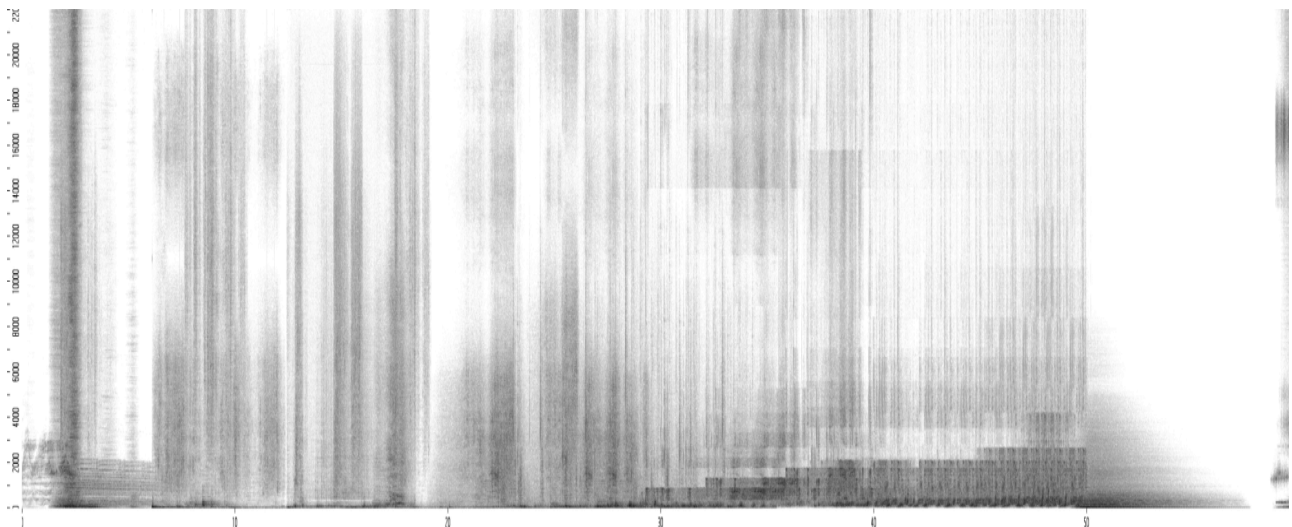


Fig. 2.5: *Stoop* sonogram 04'02" to 04'57".

The opening (04'02" – 04'57") of this section characterizes yet another representation of changing mental states. In this opening half of the section more sharply filtered sounds and clusters of sonic gestures frantically lead up to an outburst of scattering, percussive sounds that resolve by dissipating into a larger reverberating space. In this section the intention is to convey fractured images; changing states of mind partially controlled, partially steered by a ritual process, with the use of reverberation to provide a constant reminder of containment and space. I imagined an audible “prism” of images and sounds, shifting in aspect and speed that never quite resolve, with layers of tones and acoustic spaces drifting in and out of the listener’s attention.

Part 4: (05'00" – 08'49")

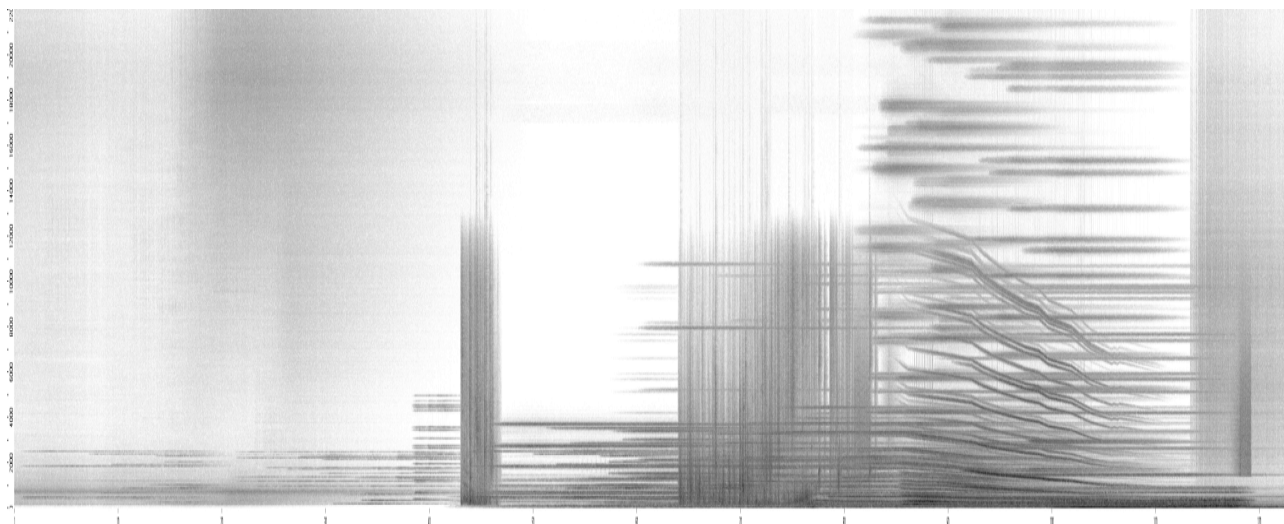


Fig. 2.6: *Stoop* sonogram 05'00" to 08'50".

The fourth section is introduced by a whistling sound together with a semi-rhythmic pulsing granular texture that provides forward momentum into a much larger compositional space. This texture is not unlike the rattles and shakers used in many shamanic rituals in north American cultures and other groups, here fragmented and perceived as a tenuous presence perhaps guiding the ritual participant onwards. In this section sounds are drawn out and open, suggesting natural elements from the outside – rain, wind, and finally thunder. The second part of the section moves away from the “natural” and introduces a sequence of abstracted sounds from the dancer, glissandi and large noisy textures that resolve into muffled and indistinct movement. In this latter part of the section, the individual reaches a high point where all links to the outside world finally are severed and he/she is totally absorbed into the process of the ritual and the workings of the imagination.

Part 5: (08'50" – 11'21")



Fig. 2.7: *Stoop* sonogram 08'00" to 10'00".

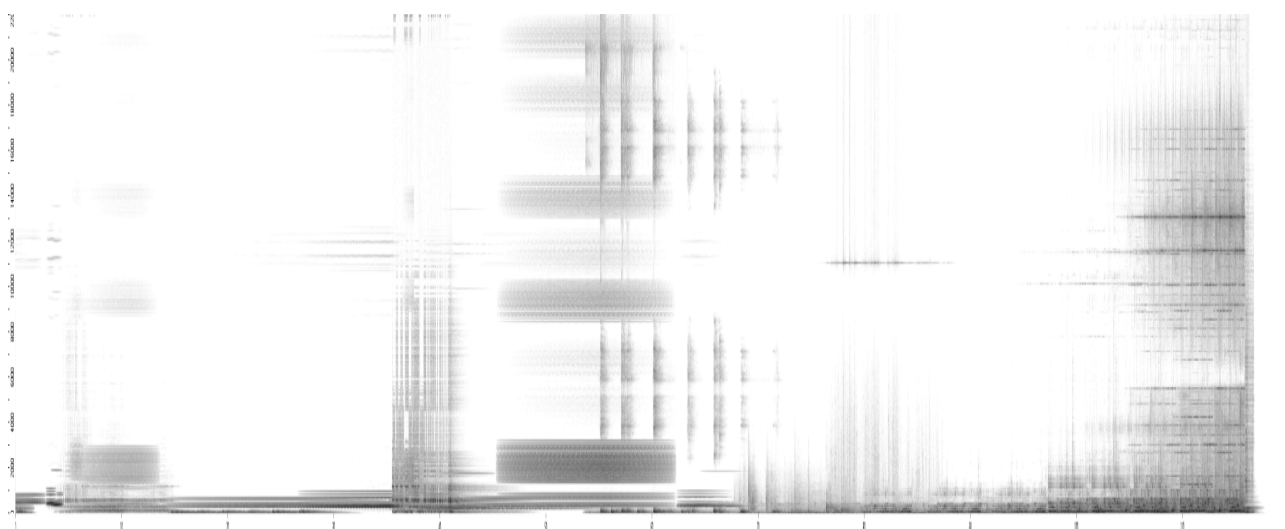


Fig. 2.8: *Stoop* sonogram 10'00" to 11'21".

The final section of *Stoop* (08'50" – 11'21") is a culmination of the sound material used in the previous sections. The sounds themselves are more elaborately processed and synthetic sounding, suggesting the development or culmination of the processes. At the same time however, a more human element in the shape of a 'heartbeat' or irregular pulse in the lowest register indicates the beginnings of the participant's emergence from a trance-like state. Occasionally abrupt gestures hint at brief, unresolved moments of 'transcendence' or 'revelation'. Fragments of bells, drums, cymbals and other recognizably ritual instruments appear momentarily, only to disappear before forming any coherent form or structure. Finally, the recognizable footfalls in a room signify the individual's return to the waking world, or return to the outside (A rapid motion consisting of cycling loops and pulses signifying stumbling out of the ritual space). A distorted gasp ends the dancers' journey back

to the outside world.

Performance

Stoop creates a sound world that conveys ideas of claustrophobia, altered awareness, tension and anticipation. It does not create a musical ritual or process that reflects the euphoria, physical energy of the ritual or a sense of the Dionysic (Dionysic as opposed to the Apollonian, music appealing to the ecstatic states and primal emotions as opposed to the rational intellect – Freidrich Nietzsche in *The birth of tragedy* (1886) considered the best music and art to be a synthesis or meeting of the two). There is little ecstatic euphoria in *Stoop*. The work is intended as an intellectual reflection of sounds and events rather than a mere representation of them – which would perhaps result in the work sounding more like generic forms of electronic dance music. In a concert presentation of this piece (Huddersfield, 2010.31.01), diffused in five discrete channels over a sixteen-channel system the bass frequencies could be boosted to more ‘physical’ levels of amplification (i.e. where the sound can be noticeably felt in the body, or through chairs and other objects in contact with the body). In performance, low frequency interference effects such as ‘beating’ and the sensation sounds actually occurring ‘inside your head’ (an element to be explored later in *Resonances* for Theremin and fixed media) all assisted in the creation of a sound-space that expressed the partially abstract ideas I had about this work from the beginning. The larger size of a concert hall in contrast to stereo monitoring in a studio or headphones listening added scale to the sections within *Stoop* that suggested larger physical spaces or movement from a smaller to larger space. Mixing the piece to five channels allowed me to add further movement to certain more defined sounds, but also to diffuse and blur other sounds in order to create an enveloping texture more pronounced than the two channel version.

Multichannel version

Mixing *Stoop* for 5-channel performance entailed no significant difficulties as the atmosphere and sound world I wished to create was an immersive and diffuse one. The piece is not defined by definite and precise gestures that could be magnified by three dimensional placement, rather *Stoop* is a series of transitions to different spaces and associative sections that benefitted from an expansion from two to five speaker presentation. Stereo sound files were subject to a selection process based on ‘foreground’ and ‘background’ values. The files that I felt demanded the listener’s attention and in some way defined each section were by default placed in the frontal stereo position, whereas more indistinct and complimentary sounds were placed in the rear. Many of the textures and broad gestures in *Stoop* were made up of layers of stereo sounds, which allowed me to create a more immersive effect easily by simply distributing them between the front and rear stereo

speakers, or by placing them diagonally across the listening field (for example placing a stereo sound in the front left and rear right speakers). Monophonic sounds were often placed in the centre speaker (if 'foreground') or equally distributed between all five if they were of a more complimentary nature. The resulting mix is equally spread over the listening space for the duration of the piece, with some extra movement from rear to front when I felt the need to create a sensation of momentum from section to section. The surround sound mix enhances the piece in that it allows more detail to be perceived in some sections due to the distribution of multi-layered sounds.

2.2: Solo Live ‘Performances’ (2010-2011)

Improvisation 1, Improvisation 2, Waterworks, Essential Economics, Twine

An important part of my musical expression is the presentation of material and processes in a performance situation. My primary focus had, for many years, been on fixed media works - expanding to include multichannel diffusion of these works, pieces written and realised in surround formats, and an ambition to produce sound installations exploring ideas around space, identity, physical boundaries and other concepts in my fixed media work. My initial live performances came about through sound engineering for multimedia presentations or concerts when my collaborators needed or wanted ‘a little something extra’. For example, whilst taking care of sound reinforcement for a concert I could be asked if I could add delay or reverberation to an amplified instrument and then if I could do something ‘interesting’ with signal processing to add an extra dimension to the sound. It is from such situations that my interest in performed live electronics developed.

During the sound engineering for a performance just outside of Stockholm with the ISM Ensemble in 2005, I agreed to improvise a little with a delay line whilst amplifying a violinist (Mikael Marin) who performed a spontaneous improvisation himself. The effect was to be minimal, to add extra dimension and depth to Mikael’s playing. Things became more interesting, however, when Mikael accidentally trod on his microphone cable, disconnecting it entirely from the stage box. He continued, as a seasoned professional, to play on regardless. I faced a snap decision of whether to either mute all of the electronics or try to ‘fix’ the problem. It would have been impossible to reattach Mikael’s microphone in time without ruining the remainder of the performance, so instead, I began routing his playing through stage microphones situated further away, picking up a slightly delayed sound from the reflections from the walls. Whilst rerouting the signal I also sent it to other signal processors on other channels on the mixer, forming partial feedback loops and delay/pitch shifting routes. In navigating quickly around the digital mixer to route effects, the results became more and more musical and interesting. This fact I only became fully aware of afterwards when the audience and performers complimented me on my improvisation - far more than I had experienced whilst rehearsing.

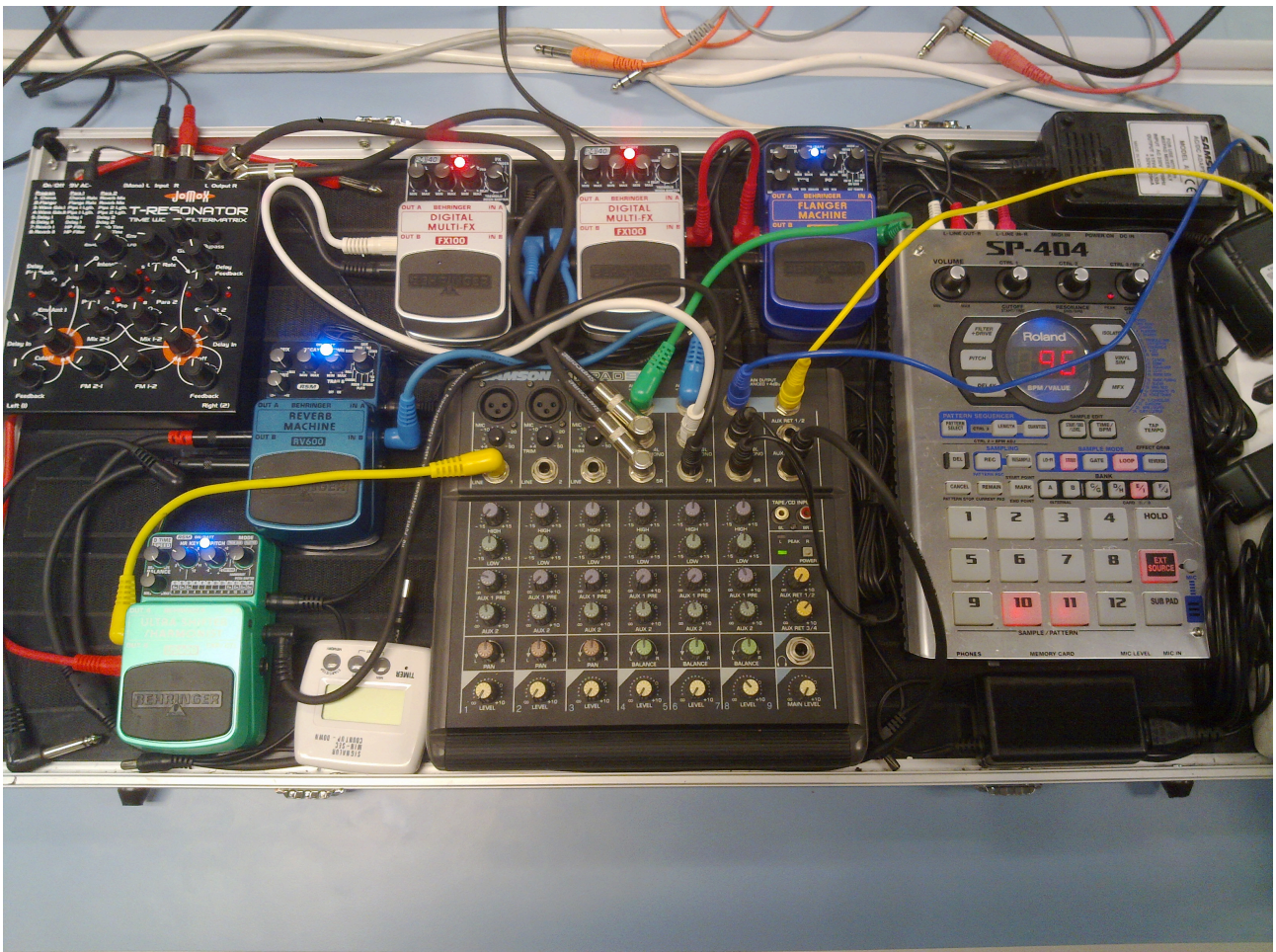


Fig. 2.9: My core electronic pedalboard ‘instrument’ as of 2009-2011.
Additional equipment would be connected into this housing when needed.

In my approach to building an ‘instrument’ the emphasis has been on the directness of interface, flexibility of integration of new modules and in many cases a large degree of unpredictability with each new module. I settled on a core signal processing and sampling/feedback instrument contained in a guitar pedalboard case (see Figs. 2.9 - 2.11). This instrument allows many varied possibilities for expression as well as being able to incorporate conventional and contact microphones and other sources, such as computers, through the mixing desk and individual module inputs.

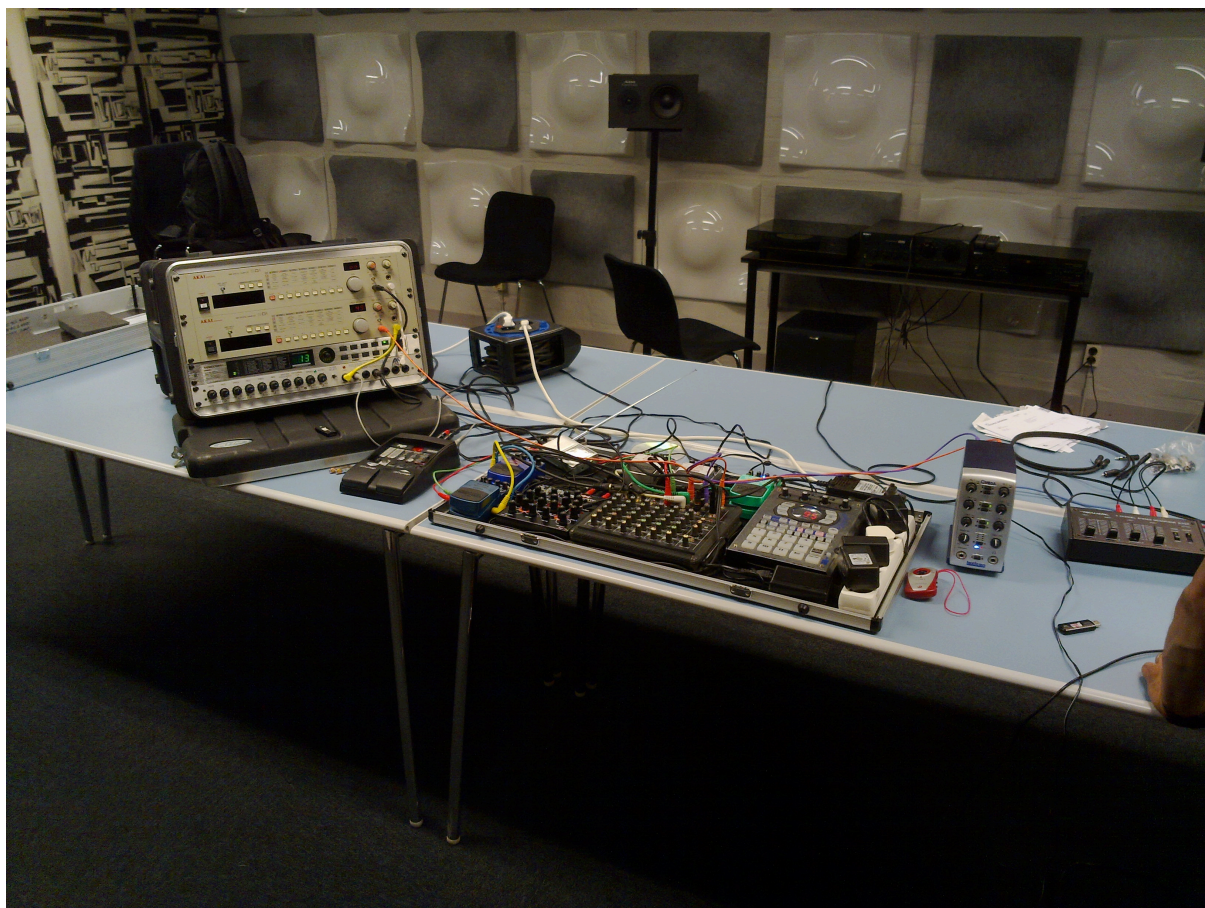


Fig. 2.10: Pedal board instrument at an experimental improvisation at the Electronic Music Studios (EMS) Stockholm 2010 – here connected to external signal processing and a pair of Akai samplers.

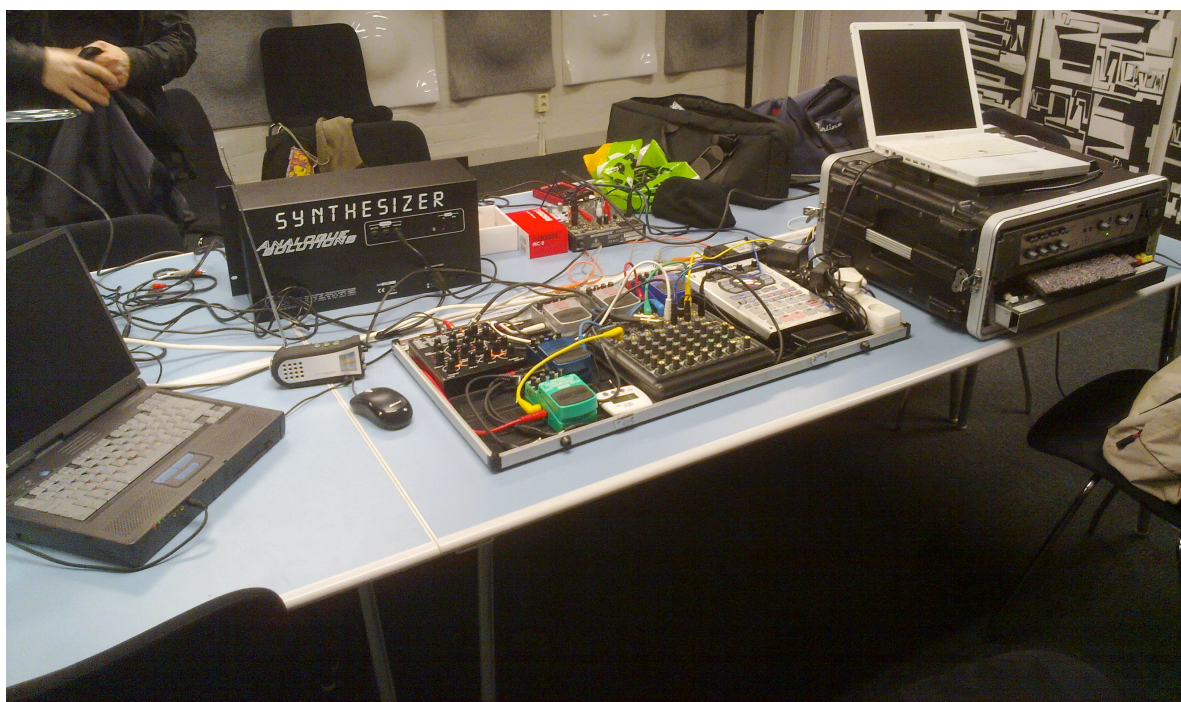


Fig. 2.11: Pedalboard instrument with input from two separate laptops, FM radio and Analogue Solutions Red Square synthesiser at an experimental improvisation at the Electronic Music Studios (EMS) in Stockholm 2011.

The instrument consists of the following elements: sources, routing, feedback routing, secondary routing (routing + additional routing), direct control interfaces, and steering interfaces.

In order to develop and change with each new performance, I would incorporate at least one new modular instrument, approach or method in order to maintain an ‘edge’ to my work.

Essential Economics (2010) 10’43”

This piece is built primarily on sound material generated by a computer sequencer triggering a collection of samples via midi note events. Triggering occurred via a step sequencer running at between twenty and forty beats per minute, triggering the samples transposed anywhere between plus or minus three octaves of the original pitch. When triggered, the samples would run for their entire length without looping, generating a mixture of long textures and short sound events, depending on their transposed pitch and subsequent length. The sequence itself consisted of a single line of sixteen MIDI events, with variable parameters of pitch and volume. The sequence was generated randomly at the start of the piece, with a randomizing function triggered at various points during the performance. The overall idea was to begin with a palette of sounds presented in a long, slow looping sequence that would be a sound source for me to apply signal processing in real-time, adding more sounds from an additional sampler as I saw fit. After exploring the sonic possibilities of one sequence for a while, I would trigger the randomize function, immediately generating a new sequence to be explored and improvised with. The aim of this piece was to investigate whether I could create a coherent piece out of controlled chaos. Having worked extensively with fixed media electroacoustic works, putting myself in a situation in which randomized sonic material within loosely defined boundaries was triggered forcing me to sculpt and interpret the sounds into a form that somehow expressed the moment of composition was an exhilarating and challenging experience. As a work, *Essential Economics* is concerned with cycles – not merely loops. It is a performed piece that relies on ‘steered unpredictability’. For me, timbral changes are more important than changes of pace and intensity within a constantly moving audio narrative of the ‘creative moment’.

The computer generating the sound material was connected to my pedalboard instrument (see Fig. 2.11) allowing me to produce at least three different signal processed versions of the material. In addition, I could resample, loop or interrupt the material in various ways, further adding to the creative choices. The piece begins with the sound material subjected to multi-layered DSP processing, before progressing into a quieter central section that includes more sparse and percussive sounds. The final section consists of more complex textures with occasional percussive elements.

This performance submitted in the portfolio was recorded via microphones in the listening space and as a result contains sounds of the audience and myself operating my equipment. The recording is unedited and is presented in its entirety. Only mild limiting was employed post-production to raise the overall dynamic level.



Fig. 2.12: Performing *Essential Economics* at Fylkingen, Stockholm in 2011.
Photo used with permission from Lars Bröndum.

***Waterworks* (2010) 9'04"**

Waterworks is an example of another approach to live improvisation I have used. This piece utilises three stainless steel bowls fitted with clip-on contact microphones and an additional directional microphone. The objects were placed on a low table in front of the audience and connected to my

pedalboard instrument. My intention with this piece was to explore the sounds of the metal objects themselves, and the sounds that could be created when they contained water. I used various objects and techniques to hit the bowls: wooden drumsticks, metal rods, rubber headed beaters and snare brushes were used as well as my fingers to tap and manipulate the bowls. I also fed the sounds of the bowls through chorus and delay lines, reverberation, filterbanks and resampling software within the sampler to manipulate the sounds. This piece was recorded from the directional microphones in the listening space. The piece is presented in its entirety without editing. Post-production limiting was used to increase the overall dynamic level.

***Twine* (2010) 7'14"**

This work is another exploration of physical objects, in this instance two long coiled springs. The springs are over six metres long when extended in order to give a playable degree of tension. Both springs were fitted with clip-on contact microphones and routed to various chains of effects processing. The springs were plucked, struck, extended and released in order to generate vibrations and overtones, which could then be processed. The primary processing technique employed in *Twine* is a lowpass filter, a dynamic double bandpass filter (often referred to as a vowel filter or twin filter and used in guitar effects processing to imitate vocal sounds), and short delay lines with resampling through a pitch-shifting program. My performance revolved around manipulating the springs to create a sustained vibration and then altering the effect series to create different 'voices' and expressive characters. As with *Waterworks* and *Essential Economics*, I wanted to place myself in a semi-ordered/partially chaotic situation with unconventional sound sources in order to stimulate the creative process. The performance was recorded through directional microphones in the concert listening space. The performance has been edited in one section, removing around one minute of material that became distorted in the recording process. This editing does not significantly detract from the overall work. The recording has been slightly limited post-production to increase the overall dynamic level.

***Improvisation 1* (2011) 6'38"**

Unlike *Twine*, *Waterworks* and *Essential Economics*, *Improvisations 1* and 2 were not recorded at a concert performance. Both of these improvisations were set up and recorded as experiments in documenting spontaneous 'playing' alone in my studio. The approach was much the same as with the previous three pieces, differing only in that I prepared a little more and had a controlled and quiet listening environment without the pressure of a concert situation. *Improvisation 1* revolves around an FM radio signal from a randomly selected station in Sweden. The spoken voice from a talk radio station is introduced and processed in different ways, using the dynamics of the voice to

create different musical patterns and timbres. The actual words or content of the vocal material are irrelevant. The intention is to generate abstract patterns. At points, the disembodied voice hints at the outside world of radio broadcasts, perhaps suggesting isolation or separation and the relationship of the individual to current affairs. The work considers the questions: How does radio connect us to the world or further isolate us, and how does our perception of reality change through the lens of the media?

Improvisation 2 (2011) 8'23"

This work used a different electronic 'instrument' than the previous four pieces presented above. I used an 'instrument' that combined a Lexicon MX200 Multi Effects Processor, Lexicon Vortex morphing effects unit, Alesis Quadraverb GT Guitar Multi Effects Processor, Analogue Solutions voltage controlled lowpass filter array, all processing (in different configurations) short preprogrammed sequences from a E-MU systems synthesiser module. The sequences were set up so that they could be triggered from the front panel of the unit and instantly 'dialled up' while the unit was running. The effects could be patched in different combinations and configurations via a patchbay housed under the front panels of the units in order to provide more flexibility in performance. The essential theme of the piece was the exploration of textures and timbres within different spaces, and the contrasts that could be generated with repetitive sound material. As with all my solo improvisations and performances there is a sense of movement and travel to abstract spaces or worlds, a ritual in sound to be interpreted by the listener as they see fit. The piece progresses through various plateaus or platforms created by the arrangement of looped sequences and signal processing, creating a kind of sensory ladder.

2.3. Collaborative performance: *Spiral Cycle* (2009 – 2011)

Dec09 part1, Dec09 part2, Dead Flowers, Wunder part1, Wunder part2, Black Box

The recordings included in this section of the portfolio are intended to display the methods, approaches and results of the particular approach that I adopted for the presentation of improvised electronic music in a shared performance paradigm. The recordings can be listened to as finished pieces of electronic music, but are more interesting and useful to me, and perhaps others, as a documentation of the first two years of the work of the duo, *Spiral Cycle*.



Fig. 2.13: *Spiral Cycle* performing at “Elsvets” Fylkingen, Stockholm 2010
Photo used with permission from Paulina Sundin.

My live work further developed through a series of spontaneous performance projects with Lars Bröndum; a composer and performer I had previously worked with in the non-profit organisation for electroacoustic music in Sweden: SEAMS (the Society for Electroacoustic Music in Sweden). Bröndum and I had often talked about live electronic music as opposed to the playback of recorded media. Following a number of informal improvisations at the Fylkingen Institute and EMS in Stockholm, it also soon became apparent that we complimented each other in our approach to live electronic experimentation and musical presentation. We initially approached this collaboration as

an antidote to the isolation and lack of inspiration we both felt from working alone in the studio on conventional fixed media works.

We decided early on not to be guided by any rules or restrictions in regards to our output. We determined that there should be no restriction on instruments, techniques, aesthetics or the desired end result. The initial idea was to just turn up and make sound together – to be ‘in the moment’. For me, that had a direct connection to the concepts explored in the central section of my fixed media work *Stoop* – namely the desire to enter into a trance-like state where the everyday was supplanted by an altered state. I regard the live performance setting as being very much akin to a ritual. One in which the performer starts, often conscious of the audience, and quickly loses themselves in the intense and immediate creation and structuring of sound, only to ‘return’ to the auditorium at the end of the improvisation to acknowledge the audience. The result of our improvisations were both refreshing and stimulating in the sense that we were surprised how quickly everything gelled and how the music produced had a sense of coherence beyond our expectations – from my perspective – the outcome of subconscious rather than conscious processes. In stark contradiction to the methods for creating fixed media electroacoustic music, we deliberately left large parts of the performance unrehearsed, unplanned and often using entirely new approaches and equipment each time we played.

Although we approached the collaboration without preconceptions and preconditions, we did decide that we wanted to be as hands-on as possible. Hence, Brøndum and myself developed our own ‘instruments’ in a modular manner, adding and replacing guitar effects pedals, micro-mixing desks, samplers and analogue synthesizers over a period of two years.

Before starting our collaboration, Brøndum and I discussed our interest in performing live: we were both aware that we wanted to move beyond creating fixed media works at the time, and had a shared interest in spontaneous composition and cooperative working. For me, the primary motivation was to become a participant of the musical experience rather than merely an onlooker – to be involved in the ritual of performance. What interested me primarily was expanding my experiences of creating music under semi-controlled conditions and responding in the moment to unforeseen occurrences. After my unplanned performance with violinist Mikael Marin in 2005 (see chapter 2.3) I felt strongly that this was a method or approach I wanted to develop further.

During the late winter 2009 and early spring 2010, Brøndum and I began meeting regularly at the Fylkingen Institute in Stockholm to discuss our ideas and improvise. Essentially we would bring

whatever equipment, objects, microphones or other tools we were interested in, connect everything to Fylkingen's P.A. system and see what happened. Sometimes we would record the results, other times due to pressure of time or technical issues we would not. The pieces presented here are some of the recordings we made over a two year period, edited in order to capture the essence of what could be up to an hour of improvisation and experimentation (in the case of *Wunder* and *Dec09*, the session has been split into two discrete pieces, as we felt the improvisation naturally divided into two separate musical sections). The name we gave ourselves for the presentation of the project in a concert situation was 'Spiral Cycle', reflecting our interest in cyclic processes, loops, regeneration and aleatoric methods.



Fig. 2.14: Spiral Cycle performing at Fylkingen, Stockholm 2010.
Photograph used with permission from Barbara Bröndum

Dec09 (2009) Parts 1 (5'41'') and 2 (4'47'')

This pair of recordings, made in December of 2009 (hence the title) features me operating the pedal board instrument detailed in chapter 2.2, and Lars performing primarily with a Theremin and selected effects pedals. My performance is focused primarily on manipulating and mixing sample loops from the Roland SP404 sampler. Numerous samples were spread over four or five banks within the SP404. As a result it was difficult to remember how all of the samples were mapped and

arranged, resulting in an at least partially chaotic approach to the piece. Brøndum's part in the piece focuses largely on creating microtonal layers and clusters with the Theremin and Digitech JamMan loop pedal (a technique I employed later in *Resonances* for Theremin and fixed media). *Dec09* has a lot of timbral and gestural space in the mix; parts fade in and out, and the sound can be sparse, often including pauses and silence. This came about as a deliberate reaction against much of the performed live electronic music played at the Fylkingen Institute at the time. Both Brøndum and I felt that much of the electronic music we had heard in concerts there was too uniform, even monotonous in its presentation, even if this was a conscious decision by the performer. The pieces we heard could be characterised as containing dense and continuous layers of sound that was often indistinct, uninterrupted and often over amplified. The results for us were unsatisfactory and repetitive. As a result, in our music, we took a conscious decision to have more variation in dynamics, timbre and tonal content. The result is a pair of relatively short pieces with similar sound material that explores drones, complex timbral textures and changes in acoustic space.

***Dead Flowers* (2009) (4'55")**

The title for *Dead Flowers* came about rather like the creation of the piece itself – in the moment. We just took the first words that came into our heads and used them. The sound material consists of pitch-based tones that are presented in a manner that is cleaner and more unadulterated than many of our other experiments. The sonic result is partially due to one of us focusing on a process involving sample and hold modulation, and the other playing 'following the leader' and imitating that approach, incorporating variations that remain in the same overall character. As a result the piece remains in the ecstatic moment throughout. Various delays, reverberation and chorusing effects are all used to elaborate further on this initial sonic idea, finally finishing up on a sampled Theremin tone fed through a modulated analogue delay and digital down sampling. The piece is a series of fractured melodies never quite resolving into anything that resembles a song or conventional form, yet constantly hinting at a hidden form or structure that never appears.

***Wunder* (2010) *Parts 1* (6'55") and *2* (6'01")**

This duo of pieces display a number of the techniques and approaches Brøndum and I took when improvising. The beginning of this piece is a collection of loops, gestures and processes with no common or connecting timbre or form. We progress the work by bringing one or more of the sound materials to the front of the perceived audio mix in order to see if and where it may lead us in our improvisation. On more than one occasion the directions we move in prove fruitless and result in an abrupt change or return to underlying loops and patterns. Eventually we settle on a pair of long repeating loops over which we improvise with shorter and more gestural sounds. After exploring

this approach for a while, we move on to layering more complicated and complimentary sounds over the initial loops. In the second half of *Wunder*, we include an electromechanical element in the form of a homemade monochord with amplification provided by a contact microphone mounted directly on the string. The resulting sounds are both amplified and included directly without processing. Additionally, the sonic material is sent to various processing lines and resampling/looping pedals. After exploring this particular approach we progress still further by means of experimenting with distortion and feedback - using sampled fragments from the monochord as gestural material manipulated with a Korg miniKP track pad controlled signal processor.

Black Box (2011) (7'46")

This is probably the most structured and musically arranged Spiral Cycle improvisation to be included in this portfolio. The recording session was no more organised or in any way planned than any other, but we did agree beforehand to pay close attention to the development of each other's ideas, and leave space for ideas and sounds to 'breathe' before plunging into new ideas and approaches. The piece is essentially a series of 'exchanges' between the two performers. We relied on simple eye contact and listening to the other's performance in the moment to decide whether to compliment, oppose, accelerate, reduce or expand the sound world and gestural character of the performance at any given time. I begin the piece with two long looped samples created from the convolution of two timbrally complex sound files created before the performance. The two samples loop unsynchronized for a short while as an introduction, being then cut out of the mix as Brøndum introduces more percussive material from a contact microphone source. At many points in the piece we use synchronized transitions from one section to another: we would make eye contact and soundlessly count down from ten to zero, or use hand signals to the same effect, then initiate a change to another instrument, process or series of sounds. Neither of us knew what the other would do next, and we would decide in the moment whether to try to play together or in opposition. The long convoluted samples are reintroduced at different points in the piece as an anchor or platform to return to and then diverge from into new improvised sections. Brøndum used the Theremin in a similar manner. The resulting piece presented here was edited from a twenty-minute improvisation. I felt that the full twenty minutes was too long, and reduced sections that I felt were excessive, and could be represented by a shorter edit instead. This reduction in length itself has interesting connotations: the performer lost in the moment loses a sense of temporality, existing in an altered state. It is not until the performer listens out of that 'ecstatic' state that an evaluation of the material created can be objectively assessed.



Fig. 2.15: *Spiral Cycle* performing at The Norberg festival, Sweden 2010.
Photo used with permission from Mattias Sköld.

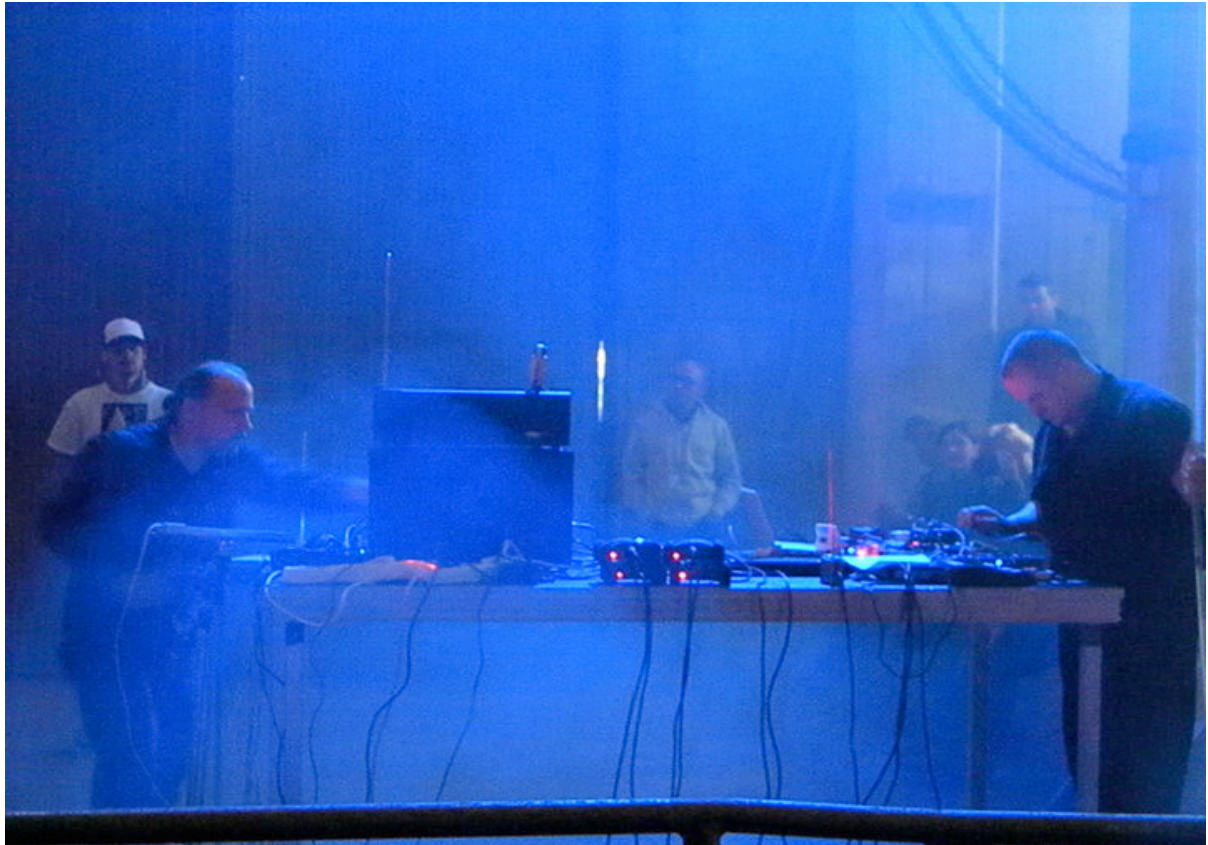


Fig. 2.16: *Spiral Cycle* performing at The Norberg festival, Sweden 2010.
Photo used with permission from Mattias Sköld.

2.4. Resonances

(2010, Theremin and fixed media work, 14'00'')

Origins

Resonances came about as a result of my previous work *Stoop*. I wanted to explore the ideas of ritual, process and personal involvement in the compositional process that I began to investigate in *Stoop*. In particular, I wanted to write a piece that included a live performer in some way, and to make the piece a meditational exercise for the performer as much as a finished musical work. I felt *Stoop* benefitted from the input of Ulrika Wedin and from the sounds of her dancing, particularly the energy and sense of intensity and intimacy they imparted to the piece. I wanted to build on this further with a composition involving a performer. *Resonances* also grew from my live performance projects, especially the duo Spiral Cycle with composer and performer Lars Brøndum, with whom I had collaborated with for around three years before *Resonances* was realised. We had already played a number of concerts together involving live improvisation and experimentation, and from this we established a shared aesthetic and understanding of each other's performances practice.

Theremin

My choice of live instrument and performer came relatively late in the compositional process – I already had a rough idea of the form and sound material for a fixed media piece based on the resonant frequencies of passage graves, but something was missing; a 'voice' that would add a more human and visually ritualistic element to the piece. It also occurred to me that sound of the Theremin, and in particular the manner in which Brøndum manipulated and controlled that sound, fitted perfectly into the sound world of *Resonances* as a whole. The use of textures, fast vibratos, microtonal clusters and looping delay lines characterize the performance style Brøndum had developed, and with this in mind I composed the Theremin part for *Resonances*.

Acoustics and archaeoacoustics

From acoustic measurements made by researchers during a number of archaeological studies (Devereux, Jahn and Ibsen, 1996; Watson and Keating, 1999) it has been observed that many of the Neolithic chamber or passage graves found in northern Europe have a resonant frequency or frequencies, or strong standing waves (measured in the internal spaces of these sites) of between 95 and 112Hz (see Fig. 1.3). What is of interest is that the acoustic resonances of these spaces mostly occur around the frequency of 110Hz. This range of frequencies is strongly present in the baritone register of the human male voice. Using these frequencies as a starting point, I wanted to explore resonance in greater depth, both physical resonance of air and matter, and more importantly

resonation as an abstract artistic foundation or concept to build upon. The work is also a personal meditation, a ritual, for the performer enabled through the interpretation and realisation of the score in conjunction with the fixed media.

Spatial elements

Resonances is intended to be presented in four or five channel surround sound, in order to mimic and expand on the resonant and immersive sound of the European stone passage grave. The resonant effects within chamber graves and other sites have been reported to be ‘uncomfortable, dizzying, disorientating, confusing, and inside my head’ (Devereux, 2001, pp.46-54) This suggests strongly to me that any composition based upon or incorporating these elements must include spatial effects, reverberation and other psychoacoustic tools in order to compliment the structural interplay of pitch, timbre, rhythm and volume. As with *Stoop*, my approach to spatialisation was one of immersion and saturation as opposed to defining and placing individual sounds in the listening space. The sound world of *Resonances* creates a physical space of layers and textures that encourages the listener’s submergence into the sonic space of the piece. The listener’s loss of ego, by being almost overwhelmed by the immersive sonic space, is akin to the loss of self in trance-like states. Crossed stereo pairs, the distribution of similar sounds around all four or five speakers and the indistinct placement of sounds characterise my approach in this piece. The intention is to surround and immerse the listener rather than draw the attention to spatial gestures or movement of individual sounds in the listening space. Sounds that were intended to be experienced as those resonant frequencies within the aforementioned chamber graves were left largely unprocessed (such as in the sine wave sequence at the start of the piece), in order that the sounds could be experienced as ‘close to ear’ as possible.

Issues in interpretation

Difficulties arise immediately when approaching a subjective experience such as that of standing waves and psychoacoustic phenomena. Although there are commonalities in reported experiences of these effects, they cannot be readily analysed in any musical sense (i.e., by sonogram analysis, scoring or other comparative methods). In addition, much of the research and literature on the subject comes from the psychological or physiological disciplines. Although the work is informed by much of this research it does not implement any one theory exclusively. Rather, in *Resonances*, I decided to create effects, spaces and transitions that triggered my imagination and the associations I had made from reading the literature on the subject. In addition, I remembered visiting a number of stone chamber graves in Sweden (Kiviksgraven and Gillhög in southern Sweden) and in Spain (Dolmen de Viera and Cueva de Menga, Antequera), and how sound behaved within these spaces. I

had some recordings made in Spain that were unusable as sound material for the fixed media part (due to background noise and the fact that both Spanish and Swedish sites had been extensively rebuilt, bringing in to question their accuracy with regard to the original structure), but were useful for the interpretation and creation of an acoustic space in *Resonances*. By listening to these recordings I could decide how to reflect the impressions of space and confinement, clarity and distinction of the sound material, and tension and release of gestural elements.

Structure and form

The initial sound material in this work came from the eighteen equally separated frequencies from 95Hz to 112Hz. These frequencies were chosen from the acoustic experiments at a number of Neolithic sites in England and Ireland (Devereux and Jahn, 1996). These Neolithic sites were found to have strong resonances particularly focused between 95Hz to 112Hz. As a number of researchers such as Devereaux, Jahn and Watson have pointed out; these frequencies lie squarely within the lower range of the human male voice and would be strikingly audible when chanting or other forms of vocalization and drumming took place within the chambers. The untreated sine tone representation of these frequencies occurs at the start of the piece, serving as an introduction and presentation of the sound material from which the remainder of the piece is derived.

The formal structure of the piece, although fixed, can be perceived differently in multiple performances depending on the particular performance and interpretation of the score by the Theremin player. The score for the Theremin and fixed media are intended to be a springboard for the imagination of the performer, and as such can be interpreted in many ways. One form for the structure of the piece is ABCD i.e. a linear progression from one musical/mental state to another, reflecting the participant's 'journey' into altered mind states or religious 'communion'. Another perceivable structure could be ABCBA a mirrored form, mapping a process of ceremonial activity building to a crescendo and returning to an original (possibly altered) state. From my perspective, *Resonances* creates a somewhat indistinct ABCBA form with the piece beginning with the simple interaction of sine tones, returning after various transformations and movements to a section consisting of high frequency sounds with a near-noise spectrum, equally simple in its presentation. Here, the ambiguity of structure is created by means of a layering of two processes – the first comprises one sound type (sine tones) developing into a multi-layered sonic environment that then dissipates to return to one sound type (tones with a high noise content); the second sees the progression from sine tones, through more complex sonic material to noise based tones. Texturally the work progresses and returns to a single line whilst sonically the work develops in a linear direction.

Method

As a starting point, the frequencies expressed as pure sine tones provide an immediate palette of sound to work with. Merely playing the different tones simultaneously produces a number of ‘beating’ or rhythmic effects, depending on the combination and amplitude of the frequencies used. The addition of more frequencies and modulation as tools to further transform the initial tones provides still more possibilities for recombination and interpretation. To begin with such simple building blocks seems appropriate, as both a way gradually to progress from simplicity to complexity and create a structural process that can be referred to later in the piece, and to suggest the confined space and somewhat claustrophobic nature of the stone chamber where the ritual participant performed his or her ritual.

Rhythmic elements

Rhythm in electroacoustic music is often elusive and does not in my experience take a dominant place in many compositions and when it does so, tends to be in a quite diffuse and abstract manner. Perhaps because rhythm and pulse have been explored and refined in so many other forms of music, electroacoustic music tends to focus on timbral and transformational structure as opposed to rhythmic and harmonic development.. It is the interpretation of the actual states entered into by the participant that interests me rather than the physiological processes involved. Much music already exists in the world of electronic music that utilises rhythm and trance inducing repetitious patterns, particularly in the club, rave, techno and dance worlds. The ritual ‘drum’ features in *Resonances* in a number of ways, both as a way of signifying a new section, and as a backbone over which the Theremin can improvise. As with Rolf Enström’s *Tjadtjag & Tjadtjaggaise* (1987), the drum is more of an abstract character or personality in the piece, subjected to transformations and altered perspectives rather than a rhythmic element in the musical material. The drum sounds and patterns in *Resonances* are abstract and synthetic and were played by me using a sampler and by listening to the patterns and sounds from various recordings of shamanic rituals in order to create an appropriate form.

Scoring

A graphic score along a simple timeline (minutes/seconds) has immediate appeal to me due to the way in which I work (often intuitively and without strict pre-determined structures). Initial sketches outlined the overall form for the fixed media part, with a sonogram of the fixed media included in the final version of the score as a partial guide to the performer. The use of simple instructions, hints and suggestive words combined with drawn shapes and visual representations became an

effective method of communicating concepts and ideas to the performer that move beyond traditional notation. This is a technique that I exploited and expanded on in the score for *Spirals* for saxophone quartet and fixed media. Much of the score of *Resonances* comprises a series of cues and suggestions for bounded improvisation. Instead of fixed pitches and events, I worked instead with descriptions of sound ‘spaces’ that the performer would try. My intention was to create instructions that encouraged the mirroring or opposition of what was happening on the fixed media part and graphically represented gestures and phrases with a few cues and information to be interpreted as the performer saw fit. *Resonances* also involves the use of delay lines and a loop pedal, with (though not essential) the addition of further guitar effect pedals or other DSP tools. Most important was the use of delay and loop pedals in order to create the microtonal clusters crucial to the atmosphere and mood of the work. It is irrelevant how the performer achieves the suggested effects and sound in this piece, and in fact I would encourage any performer to create and experiment with their approaches, further enriching and giving life to it.

Part 1: (00'00" to 01'23")

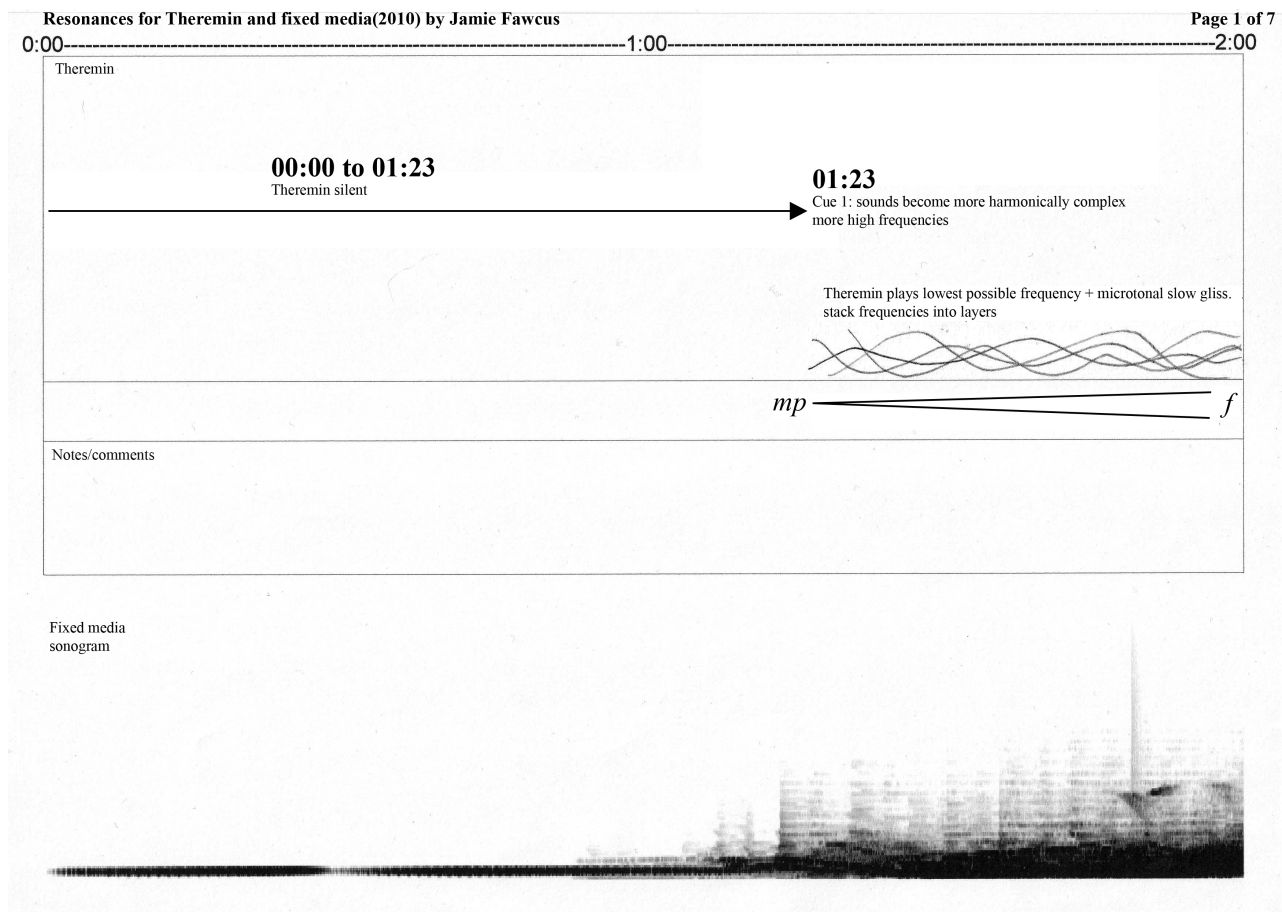


Fig. 2.17: *Resonances* score page 1.

Resonances begins with a sequence in which eighteen sine tone frequencies are presented and mixed in two larger swelling gestures. The tones are allowed to interact with each other in various ways, creating rhythms, pulses and beating. The effect is more striking and interesting when played over four or more channels, as the beating effects are noticeably different depending on the listener's position in the room, and can change in amplitude and perceived 'nearness' should the listener change position in the listening space. At 00'54" more complex sounds emerge. Though still derived from the original sine tones, these sounds are subjected to repeated amplitude modulation between frequencies and effects created by short delay lines. This provides a structural sonic blueprint of evolution from simplicity to complexity – one that is oft utilised in the work at different musical levels. The ritualistic nature of the piece is also suggested here, with the simple resonant frequencies at the start inspiring more complicated resonances and associations in the imagination of the listener. Additionally, the more complex sounds serve as a cue to the performer to begin his or her interpretation of the first gestures and instructions in the score.

Part 2: (01'23" to 03'17")

Resonances for Theremin and fixed media (2010) by Jamie Fawcus

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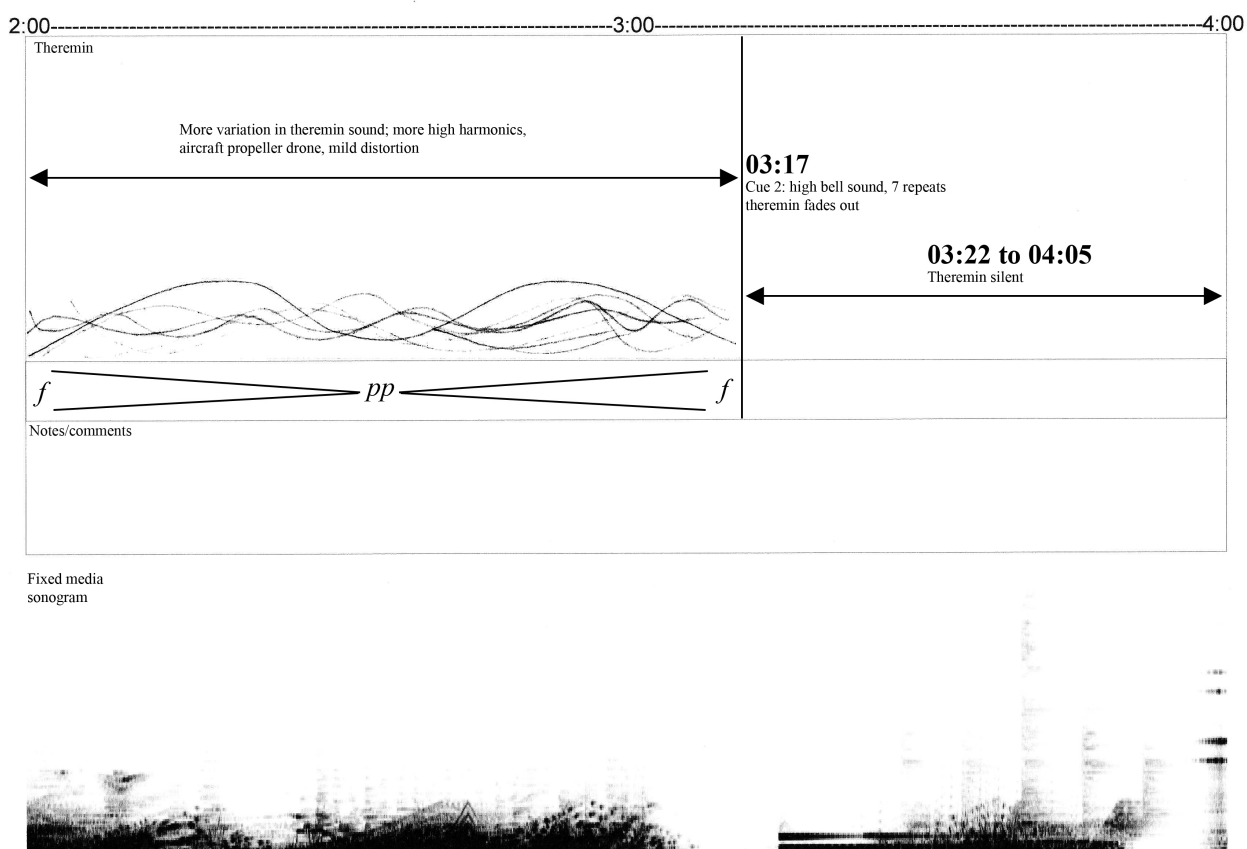


Fig. 2.18: *Resonances* score page 2.

The initial instructions to the theremin performer are to play the lowest audible tones possible (see Fig. 2.17), and layer and combine them using looping delay lines. The Theremin is intended initially to blend with the fixed media part and to create a shifting sea of undulating low frequencies. Throughout this section the Theremin drifts in and out of audibility. The Theremin glides in and out of the listening space as the fixed media part continues to elaborate and build on the initial sound material. The initial sound material is developed by means of rising and falling glissandi, the introduction of higher frequency tones, short modulated gestures reminiscent of echoes and clattering pebbles and variety of interlinking layers made up of contrasting gestural content. From 02'00" to the end of the section, the Theremin is encouraged to expand and vary its sound, adding higher frequencies and becoming more distinct as a separate entity within the piece (see Fig. 2.18).

Part 3: (03'17" to 04'05")

Introduced by a high bell-like sound, the third part of the work begins with the fixed media developing the synthetic sound material of the opening to create a varying, echoing space

suggesting heightened senses, mental arousal and expansion of mental spaces.

Part 4: (04'05" to 05'48")

Resonances for Theremin and fixed media (2010) by Jamie Fawcus

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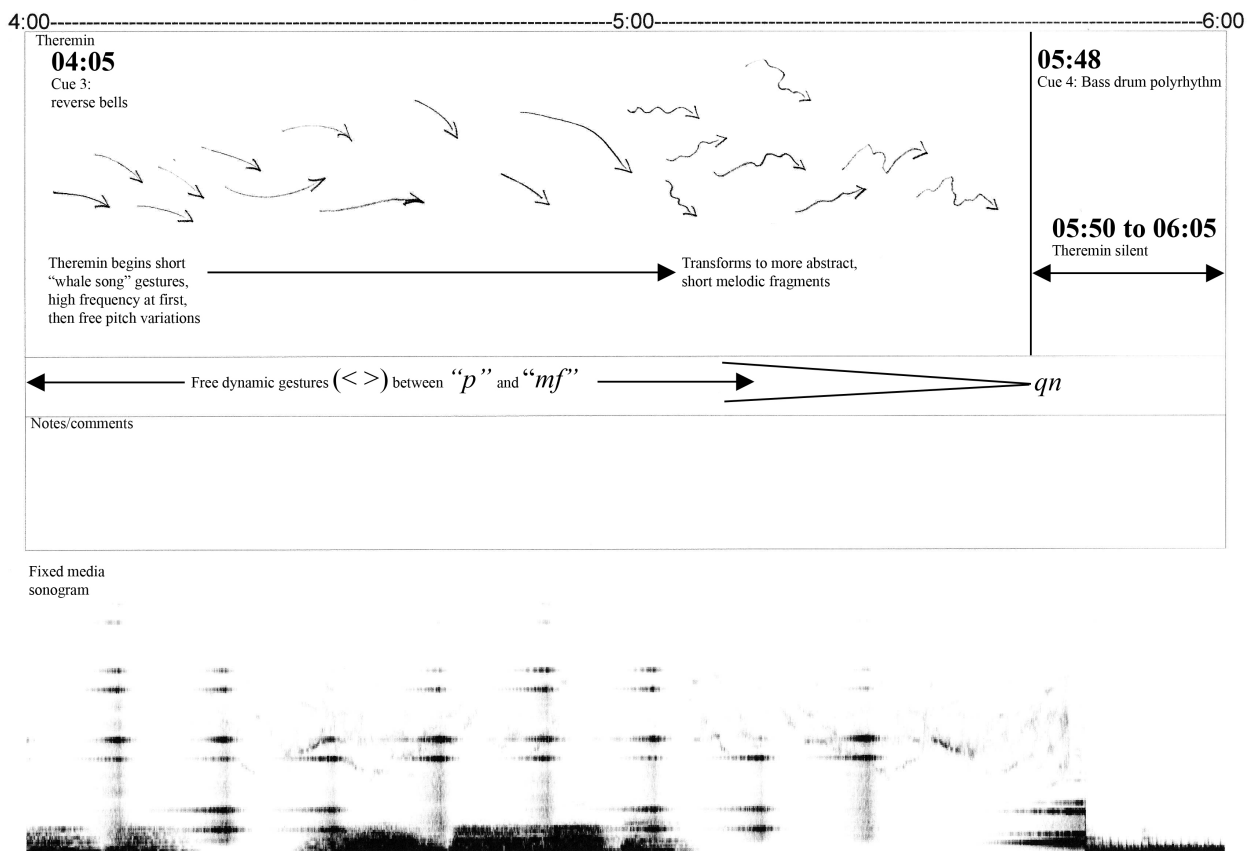


Fig. 2.19: *Resonances* score page 3.

The Theremin returns after a cue from a series of reversed bell-like sounds. The performer is instructed to imitate whale song in sparse high frequency gestures (see Fig. 2.19). This fourth section was inspired by trying to imagine what sounds an individual 3000-4000 years ago might hear in the vicinity of the chamber graves that are the inspiration for much of my work. Whale song, particularly that of the hump-backed whale would have been audible to people in Scotland and the Orkneys (where the beehive cairns such as Maes Howe have been studied by acoustic archaeologists, along with many other sites in Scotland such as the Clava Cairns, Easter Aquorthies, and other ancient stone constructions). The Theremin can easily create an uncanny imitation of whale song with simple playing techniques and reverberation, as I discovered during long improvisations with Lars Bröndum. This seemed to me a natural connection and opportunity to combine a modern electronic instrument with an ancient sound experience from the natural world. The musician is first instructed to imitate whale song, then expand and adapt that imitation into more improvised melodic passages based around the original idea. The musician is given the

freedom to interpret the instructions in their own personal way whilst remaining sympathetic with the overall character of the piece.

Part 5: (05'58" to 07'48")

Resonances for Theremin and fixed media (2010) by Jamie Fawcus

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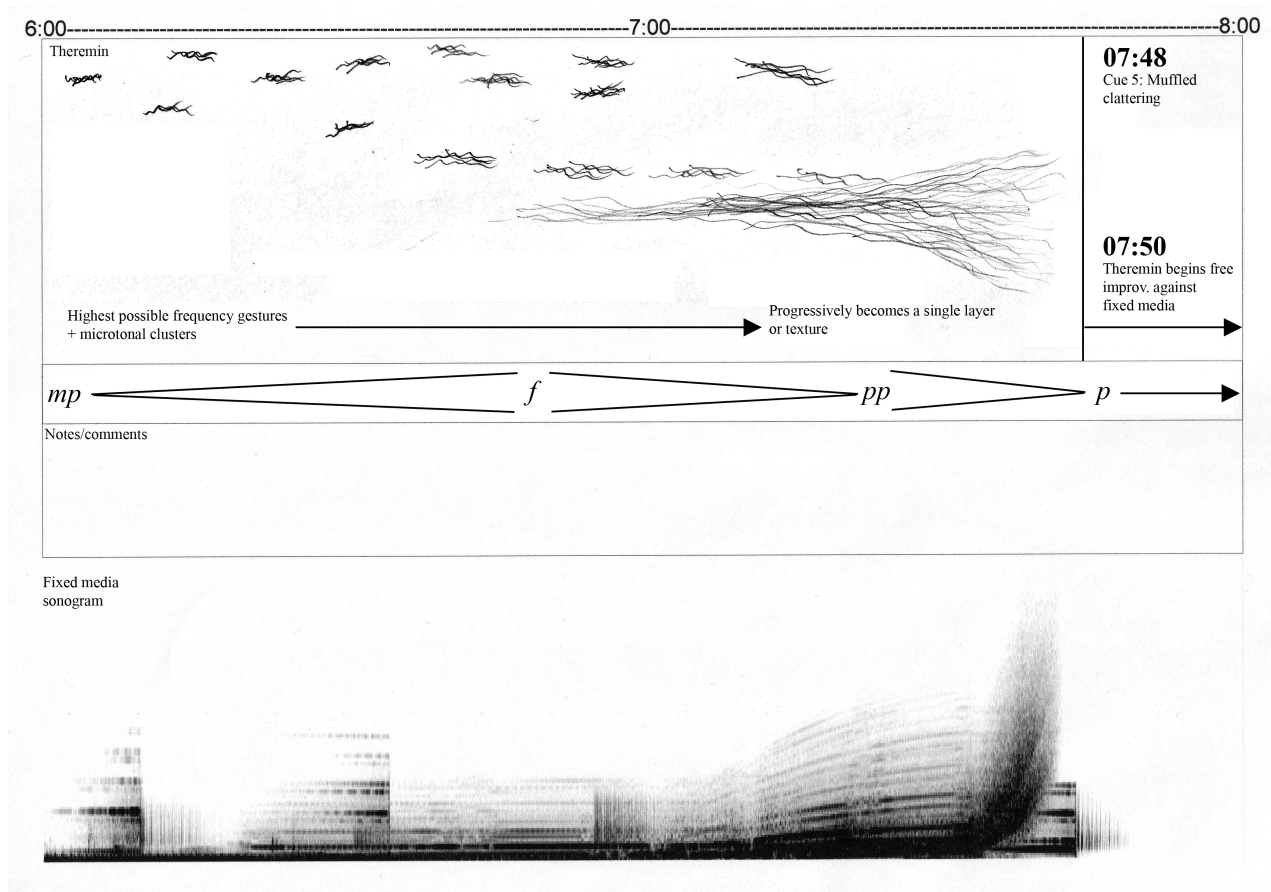


Fig. 2.20: *Resonances* score page 4.

The drum is heard for the first time in the fifth section of *Resonances*. The drum is restricted very much to the lower frequency register for two reasons; firstly to leave more space in the mix for the Theremin to sound through, and secondly in order that the drum may be divorced from any cultural or traditionally musical associations, leaving it as an abstract voice or presence defined by its effect on the listener and interaction with the other sound material. The drum fades gradually as the Theremin takes over the audible foreground in the bounded improvisation that follows. The Theremin here is directed in the graphic score by wavering lines together with instructions to play high frequency clusters of sound, progressing gradually downward in pitch, eventually melding into a single layer or texture (see Fig. 2.20). The instructions here are deliberately ambiguous and open to interpretation in order that the performer may react spontaneously to the fixed media part, or plan their own interpretation of it in rehearsal.

Part 6: (07'48" to 10'00")

Resonances for Theremin and fixed media (2010) by Jamie Fawcus

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8:00	9:00	10:00
Theremin		
08:00 to 09:00 Improv. variation1: gesturally "talk" to fixed media, begin and end at will between time markers. choose freely between distortion, chorusing, pitch shifting and granulation		09:00 to 10:00 Improv. variation2: gesturally "talk" to fixed media, begin and end at will between time markers. choose freely between distortion, chorusing, pitch shifting and granulation
←		→
variation - 1		variation - 2
Free dynamic gestures (< >) between "ppp" and "ff".		
Notes/comments		
Fixed media sonogram		

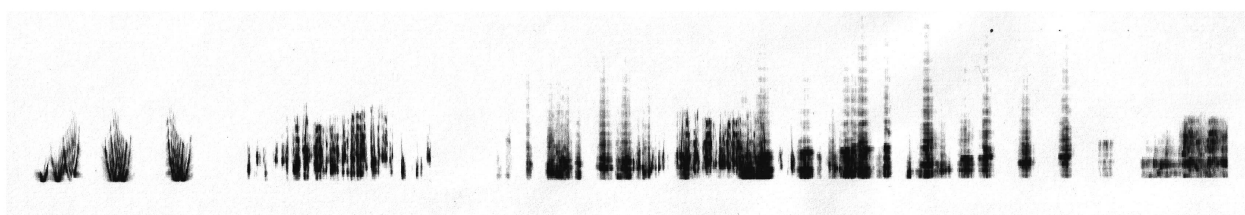


Fig.2.21: *Resonances* score page 5

Following a short section drawing from the initial sine tone material, in which the fixed media part plays in isolation, the Theremin begins the first of two free improvisations. For once, there is little suggestion in the score as how to proceed. The section is split into two equal sections of a minute each, named variation 1 and variation 2 respectively (see Fig. 2.21). Again I wanted to create a great deal of ambiguity in the score so as to force the musician to interpret his or her own performance in relation to the fixed media part. A performer may interpret this page of the score as an encouragement to present an initial theme or idea, then a variation on that idea, or a musical form followed by its mirror image, or even two wholly unconnected playing techniques and sounds. Any of these ideas would be in keeping with the spirit of the work as a whole. The fixed media part with the Theremin in this section is predominantly composed of short gestures, further encouraging the musician to play freely around or against the electronic sounds. This whole section encourages the player to engage fully with ritual of the performance. Rather than merely performing a predetermined score, the player is encouraged to respond to the moment, to abandon formal archetypes and traditional performance practice and to negotiate a space within the on-going ritual that is the work.

Part 7: (10'10" to 12'12")

Resonances for Theremin and fixed media (2010) by Jamie Fawcus

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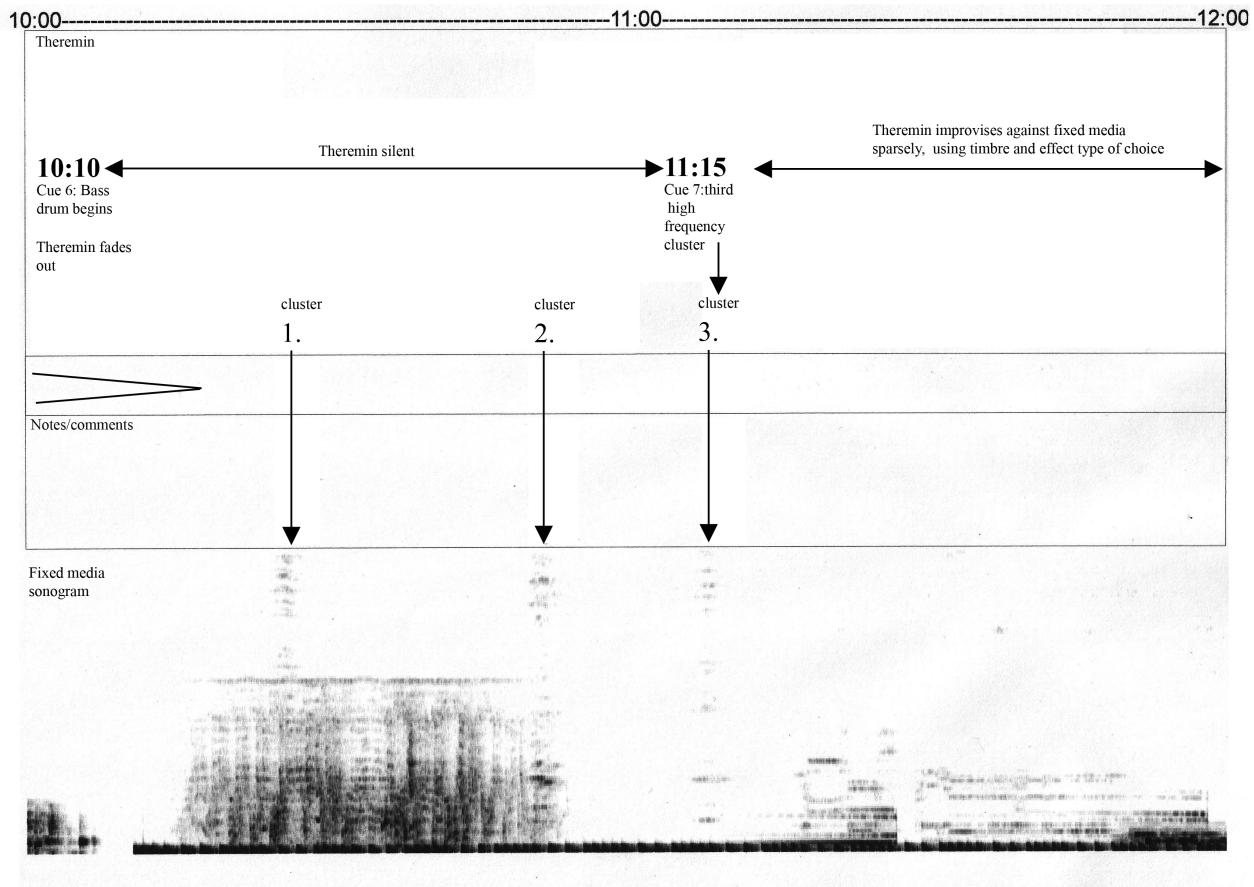


Fig. 2.22: *Resonances* score page 6

The shaman drum returns together with another more ‘concrète’ sound in the seventh section (see Fig. 2.22); a heavily processed sound imitating a shaman's voice using formant filters to approximate vocalisation techniques that enhance and manipulate the frequency content of the sound, imitating the formant characteristics of the voice box, vocal tract and mouth/nasal cavity (Sundberg, 2001). After listening to recordings of shamans from various parts of the world, I wanted to include an homage to this varied and widespread tradition in world cultures. Rather than using sound material from an actual recording, I wanted to create the impression of the voice myself, just as the Theremin creates the impression of the whalesong in an earlier section. Using a combination of the Digidesign (Avid) AIR research Talkbox filter and Waves Morphoder plug-ins together with convolution techniques from the Soundhack program, I was able to create a vocal character that with the addition of reverberation, created an ambiguous and eerie voice that adds a more human element to a predominantly synthetic sound world. The ‘voice’ and drum continue in a short duet until the ‘voice’ is replaced by a high pitched ‘whispering’ part, suggesting an abstracted essence or spirit of the voice, which is heard more in the following section.

Part 8: (12'12" to 13'54")

Resonances for Theremin and fixed media (2010) by Jamie Fawcus

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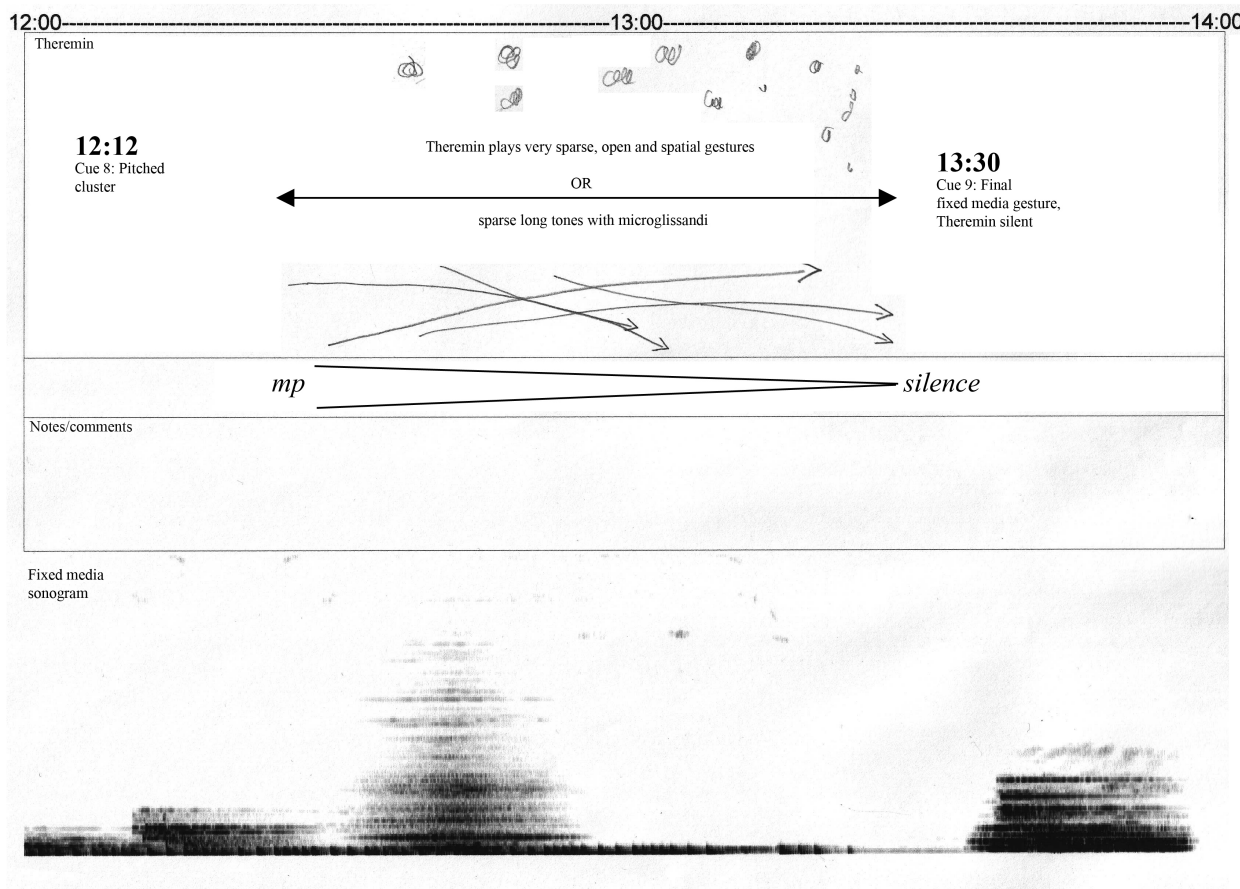


Fig. 2.23: *Resonances* score page 7

Accompanied only by the high frequency 'voice' and occasional gestures, the Theremin begins its final improvisation with the fixed media part in section eight (see Fig. 2.23). Here, the Theremin is given a choice to play sparse, open and spatial gestures, or sparse long tones with micro glissandi (for example by overlaying long loops of sustained tones with a loop pedal, each time including small and gradual variations in pitch). Essentially, the performer is given a choice in interpreting both the score instructions and the audible material in the fixed media part, and is given an opportunity to conclude, consolidate or in some way sum up their sonic decisions thus far in the piece.

The score and fixed media part for *Resonances* create an imaginary 'chamber', albeit a virtual space in four-channels for the performer to inhabit. Within this space the performer may partly follow, partly interpret his/her own personal ritual. *Resonances* creates a very distinct and evocative atmosphere unlike many mixed works I have experienced due to the particular focus on specific

frequency ranges and the auditory effects they engender. These effects are heightened when the work is presented in a multichannel format. In the performances thus far given by Lars Bröndum (2010.31.01 at Huddersfield University, and 2011.08.04 at IDKA, Gävle in Sweden) both were very atmospheric and expressive, though very different in their individual character. This is very much the idea with *Resonances*, to create a sound space within which the audience and performer are invited to enter an audible chamber where they can let the mind and imagination run free.

2.5: *Spirals*

Saxophone quartet and fixed media. 10'22", 2010)

Origins

Spirals was inspired by the Stone carvings from Kiviksgraven (see Fig. 2.24) and sets out to interpret these carvings in sound. The composition creates an audible bridge between two worlds that are of great interest to me; those of early human history and those of experimental arts and music. *Spirals* was, for me, a process as well as a finished piece of music. This was my first real attempt to express my ideas through the medium of conventional musical instruments played by other people. As such, it was an experiment and test of my own ability to communicate those ideas and to develop my abilities outside of a purely electronic format. I was fortunate to be able to work with the Stockholm Saxophone Quartet, a group with many years experience and a genuine enthusiasm for new music and experimentation. This piece was written for them and would not have been possible without them. When approaching the notation of this piece I decided early on that I would have to develop my own methods for notation as I felt that using staff notation would be a hindrance and would force me into writing in a manner dictated by the notation itself which had little connection to the visual panels which inspired the piece. I think of sound and music in terms of shape, structure and texture, and decided that I would try to translate and use these impressions as directly as possible, without resorting to the medium of notes, bars and other conventions. From the outset, I wanted to use the musician as an interpreter or improviser of concepts, shapes, structures and themes, and this preconception proved useful.

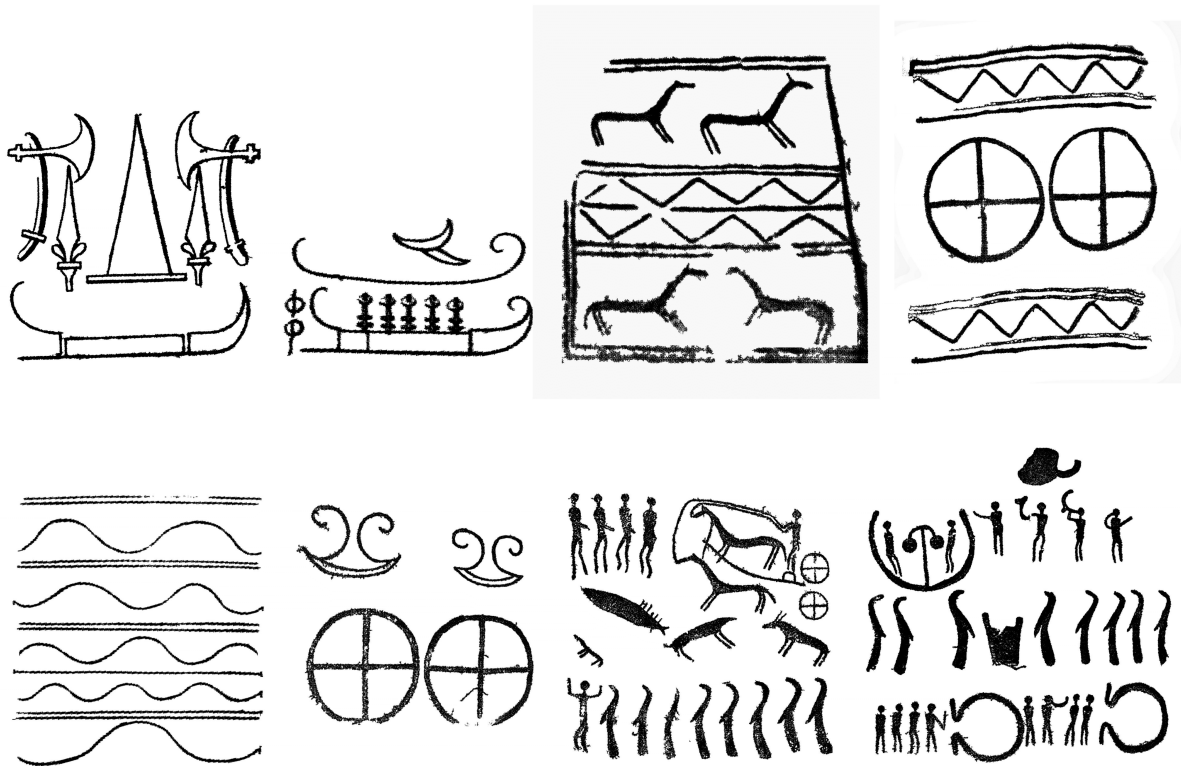


Fig. 2.24: The Kiviksgraven carvings/panels. Read left to right, top to bottom, the first panel (panel 1, top left) is a reconstruction based a sketch from 1756 by N. Wessman. The remaining images have been extracted from photographs (courtesy of the Swedish National Heritage Board) taken on site and digitally enhanced for clarity.

This piece consists of one main theme throughout: an abstract ‘narrative’ drawn from the pictorial carvings from the Kiviksgraven burial site in southern Sweden. In addition to these specific carvings, I was inspired by the spiral/wave shaped line carvings that occur widely in Bronze Age art. *Spirals* became the title of the piece, but the use of spiral shapes in the composition and structure of the piece became far less important than the interpretation of the stone tablets of the Kiviksgraven burial site. The cultures that created and used the Neolithic chamber graves of Newgrange and Knowth in Ireland, and Kiviksgraven in southern Sweden amongst others, left extensive and complex carvings on the stones of these monuments (Devereux 2001, pp.79-87; Ingalls Garnett 2005, p.15). These carvings have variously been identified and associated with burial processions, lunar calendars, religious observations and other ritual activities. It has been speculated that these carvings were also an attempt to represent visually the sounds or the effects of the sounds experienced within the chambers themselves (Devereux and Jahn, 1996; Watson and Keating, 1998). Shapes such as spirals, waves and other abstract forms are seen in sites all over Europe and are indeed common to many Bronze Age cultures around the globe.

One example of Bronze Age art in particular caught my attention; the stone tablets and carvings discovered in Kivik, Skåne in southern Sweden. This archaeological find consists mainly of eight beautifully carved stone tablets that were thought to make up the surrounding enclosure of a tomb within a burial mound. These carvings immediately suggested to me a graphic score for a composition dealing with the themes and images contained within the carvings themselves. In fact, the carvings found at Kiviksgraven are laid out in an apparently left to right text-like arrangement, much like writing on a page (Goldhahn, 2006, pp.177-179 and 2009, pp.361-363). The score for *Spirals* is arranged accordingly, with the tablets read in more or less the same way (the content 'read' from left to right, in rows, with each panel treated as a page in a book or score).

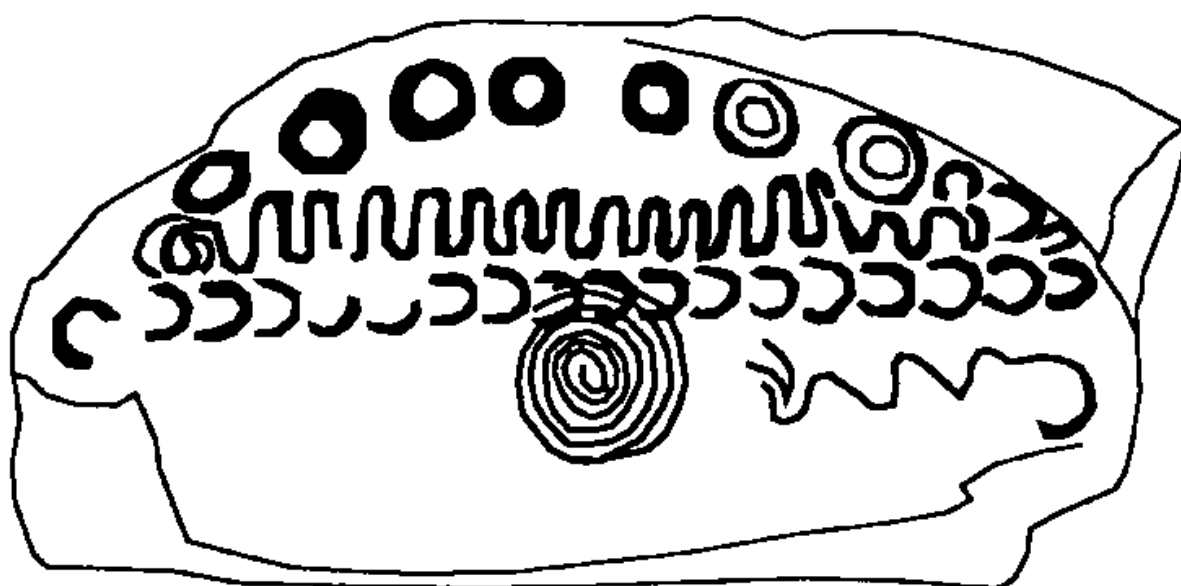


Fig. 2.25: A sketch of one of the 'kerb stones' from Knowth chamber grave in Ireland, depicting what is thought to be a lunar calendar, and features a central spiral motif. Photograph used with permission from Phillip J. Stooke (<http://publish.uwo.ca/~pjstooke/knowth.htm>) - May 2012

There are many ways to interpret shape in sound. One way would simply be to overlay an existing form onto an instrument stave and experiment with the arrangement of notes, events and dynamics following the path of the form in space and time (à la John Cage). Another is to import an image of a spiral into a visual synthesis program such as Metasynth or Coagula and with an x y z axis sonogram (x=time, y=frequency, z=amplitude, plus colour variations for stereo placement) in an attempt to present the visual material using FFT resynthesis. An idea that appealed more to me was to work closely with a musician and find a way for them to express the shape using their own performance techniques and imagination, and then to experiment further with my own

interpretations using recorded sounds from the instruments combined with both concrete and synthetic sounds processed in the computer. Rather than be led by more physical and literal interpretations of shape, my compositional preference is rather to thread a path through and around ideas and themes suggested by the shapes concerned. This, and my existing fascination with very old pictorial images, carvings and rock paintings led me to gather the building blocks of what would become a piece for saxophone quartet and fixed media. The spiral shape, although prompting the title of the piece, eventually took a secondary place to the Kiviksgraven panels in the compositional process – the title remaining as a means of describing the overall organic character of the piece as a whole.

Instruments and sound

My first inspiration when writing for a quartet of woodwind instruments was to conceive each instrument as a flow or stream of sound, defined by its interaction with the other instruments. Immediate metaphors that came to mind were direction, blending, separation, combination, opposition and fluidity or stasis. I was influenced by three other pieces by Swedish composers written for the Stockholm Saxophone Quartet, *Ti Chor* (1997/1999) by Paulina Sundin, *Footprints of Mongolia* (2003) by Ylva Nyberg Bentancor and *Broken Silence* (2009) by Åke Parmerud. Additionally some of the first electroacoustic music I ever heard included the saxophone - *Lilt* for soprano saxophone and tape (1989) by Ian Dearden and *Screaming in the sky* (1984) for tenor saxophone and tape by Tom Williams, featuring Steven Cotterel playing the saxophone (available from the Keele University Music Department). These pieces illustrated to me the possibilities opened up by the use of multiphonics and extended playing techniques as a way of transforming the saxophone into a timbral ‘toolbox’ and voice I could use in my own way. Both pieces played by Cotterel are distinctly tonal in nature, but I found the pitched aspects less interesting than the use of dynamics and the sense of movement displayed in both.

I decided early on that multiphonics, sounds with unclear pitch centres and noise spectra would be the basic building blocks for this work. Although I am less interested in tonal material, I did not wish to exclude it altogether, and gave the quartet sections within the piece where they could improvise with pitch if they wished, as well as incorporating tonal material in other sections. Pitch is a factor in *Spirals*, though very much secondary to the timbral elements, and subservient to the interaction of the musicians with the electronic sounds. Pitch serves as the antithesis to the noise-based extended techniques rather than forming the architectural basis of the work.

Nearness and contrast

Initially I wanted to work with four bass saxophones, to engender experimentation with timbral ‘nearness’ and frequency ‘beating’ when multiple instruments play and modulate the same tone. In addition, the raw presence and physical energy of the lower registers and the distribution of resulting overtones appeals to me. The emphasis on bass frequencies and the textures arising from the blending of different low frequency sounds form a coherent link with my existing work in this portfolio (namely *Resonances*). I also felt that this unusual arrangement of instruments offered significant compositional potential. After experimentation with the quartet, however, I decided on an instrumentation of two baritone saxophones as well as one tenor and one soprano saxophone. The decisive factor in choosing this instrumentation was the desire to create a smooth transition between tones and their related multiphonics in the higher register instruments, and the combined sound of the four instruments played together allowed a greater variation in timbre and musical tension than I had initially conceived. I have not specified the exact instrumentation in the score, however, as I want the piece to be interpreted and developed over time. It could be that a different quartet would choose a different arrangement, which would be wholly acceptable in the spirit of the piece. The electronic sounds function as a platform or loose structure which the saxophones can weave in and out of, complimenting the electronics as well as working against it in various degrees throughout the duration of the piece.

Improvisation and score

If the only consideration for *Spirals* were the arrangement of sound and compositional parameters, I would have likely created a completely fixed media piece instead. One of the most exciting parts about working with a musician or group of musicians for me is the element of interpretation, improvisation and chance. A piece is ‘alive’ in a much more vivid sense if it can evolve and change every time it is played, or change identity depending on the musician performing it. Uncertainty and more indeterminate elements in music are stimulating from a compositional perspective, and add another dimension both to the experience of creating the piece and in its performance – the performer has to respond in the moment to the ritual of performance. I decided early on in the compositional process that the spontaneous elements of this piece would be steered to a certain extent by a series of simple instructions and images inspired by the Kiviksgraven tablets. As a result, the score for *Spirals* at points resemble a sketch, in other parts there are simple instructions, whilst other parts are left for the performer to interpret freely.

Structure

Spirals can be divided into six sections corresponding to six panels from the Kiviksgraven carvings. I originally intended to interpret all eight panels (see Fig. 2.24) but eventually settled on panels two,

three, four, five, seven and eight. I rejected panel one as it turns out to be a reconstruction from sketches made at the original excavation over two hundred years ago (these sketches appear in literature from around 1700), and as the original tablet disappeared soon after the sketches were made, I felt this panel to be somehow corrupted, and therefore discarded it. Panel six felt too much like a repetition of panel four, and though it could have served to inspire a structural repetition or variation, I had already decided not to follow the physical arrangement of the panels too strictly, and subsequently concentrated more on their content. Panel four appears to be more complete and undamaged than panel six, and contains more or less the same visual material, so I decided again to discard what I felt to be unnecessary repetition.

Spirals is composed in a linear block form, comprising an A \bar{B} B \bar{C} C \bar{D} D \bar{E} E \bar{F} F structure, without any clear repetition of material. Variation, repetition of timbral ‘themes’ and structural development occur in a fragmentary manner; sounds and images reoccur in the fixed media as partial reflections of the previous material. I let the panels inform my compositional thinking when deciding the nature of the sounds that were to be used and their musical arrangement. I used the saxophones as a way of consolidating and exploring the material during performance.

A. (Panel 2) Time 0’00” to 02’00”.

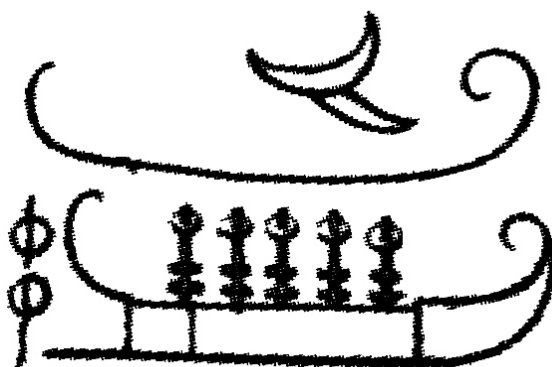


Fig. 2.26. Kiviksgraven Panel 2.

1 0:00-----1:00-----2:00

Sven (Waves and wind)

Per (Wind)

Leif (Waves into pebbles on the beach)

Jörgen (Wind, gusting in trees)

EAM

Sono

The score page features five staves. The top staff (Sven) contains wavy, horizontal lines representing waves and wind. The second staff (Per) shows similar wavy lines for wind. The third staff (Leif) depicts a sequence of small, dark, circular shapes representing pebbles on a beach. The fourth staff (Jörgen) features wavy lines for wind, with some lines showing more pronounced, gust-like patterns. The fifth staff (EAM) contains a series of small, dark, horizontal lines representing a textured sound. Below the staves, there is a large, dark, abstract image that appears to be a close-up of a textured surface, possibly a ship's hull or a natural formation.

Fig. 2.27. *Spirals* score page 1.

The opening ‘scene’ (see Fig. 2.26) reflected in the music here is one of travel by sea and the natural sounds implied by the ships depicted in the carving. I was immediately struck by images of travel and arrival, or the beginning of a final journey. In early history and archaeology the ‘ship of death’ or ‘ship of the sun’ occurs often across differing cultures and became a constant theme for me throughout the movement and subsequently the piece as a whole. The sound material is taken from recordings of environmental wind noise, the manipulation of polystyrene packing foam fragments and the extended playing techniques of Jörgen Petterson from the quartet, whom I recorded separately for this purpose. The saxophones are provided with broad gestural cues in the score, together with verbal descriptions of the sounds they are to imitate and play (see Fig. 2.27). Neither of these two scoring techniques is intended to be exhaustive or exact, they function as signifiers, directions and timbral pointers with which the musician may approach their own particular interaction with the electronic part and with each other. This section begins quietly and builds in complexity, eventually fragmenting, calming and settling like waves breaking and dissolving on a beach, or like ships coming to a gentle halt on a new shore. Sustained sounds transform into more percussive ones, akin to footsteps on a pebbled beach.

B. (Panel 3). Time 02'00" to 03'50"

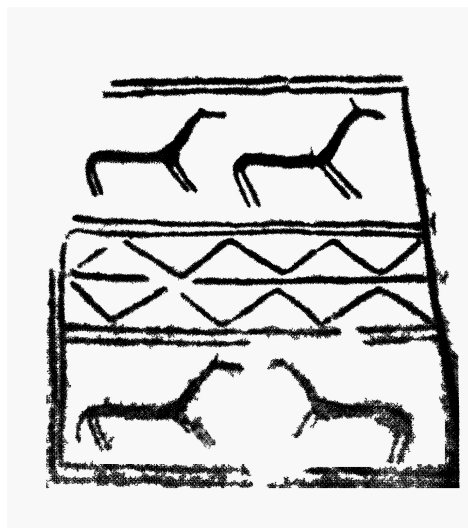


Fig. 2.28. Kiviksgraven Panel 3.

Jamie Fawcus Spirals for Saxophone Quartet and Fixed Media (2010) Page 2 of 5

2 2:00-----3:00-----4:00

Sven		Rhythmically improvise over pulse, strike bell + other parts of sax with fingernails, sparse but definite
Per		Rhythmically improvise over pulse, strike bell + other parts of sax with fingernails, sparse but definite
Leif	Sparse percussive pulse with variations, T=120 (clicks, thumps, "cha" "puh" "tuh" "kuh")	
Jörgen	Sparse perc. improv. over pulse, gradually taking over pulse T=120 (clicks, thumps, "cha" "puh" "tuh" "kuh")	

EAM

Sono

Fig. 2.29. *Spirals* score page 2.

Introduced by three deep bass attacks the section based on panel three combines arrival on land with travel across land, in particular by horse, as presented in the stone tablet carving. The upper pair of horses in panel three travel together in one direction, whereas the lower pair move in different directions, or in opposition, as I choose to interpret them in this case (see Fig. 2.28). The low

frequency component of the electronic part at this point is rhythmic in the sense of a pulse rather than strict meter, with variations in modulation and intensity within the same overall pulse. I wanted to reflect the motion and the movement of the horses in an abstract manner that could be mirrored and distorted in the saxophone performance. Initially I incorporated actual recordings of horses galloping, trotting and walking into the electronic part, but found them to be too obvious and uninspiring. Instead, I represented the horses more abstractly through the pulsed electronic sound to give the impression of a more fractured, distorted memory or audible ‘essence’ of horses. This manner of sonic suggestion was to some degree inspired by the simplified way that people often represent sea birds in sketches, in which they seem to capture the motion and essence of a bird, its flight and posture in a minimal number of lines or strokes. The early rock paintings from Grotte Chauvet in southern France (Renfrew 2009, pp.74-94), featuring rhinoceros in packed clusters, in some cases distorted or displaying multiple outlines also contributed to this approach. The electronic part functions as a signifier in this way; a suggestion or representation of horses, with the coarse gestures in the mid-frequency range suggesting the anxious movements and breath of skittish animals. The saxophones here take a rhythmic pattern, parallel to the pulse of the electronic sounds, acting as a polyrhythmic counterpoint in which the instruments can improvise with percussive sounds that are both timbrally interesting, and additionally imitate the snorts, huffs, stamping and movement of horses (see Fig. 2.29). The zigzag lines bordering the images in this panel serve as a secondary ornamentation to the low frequency electronic part. The slow bass tones, introducing the tonal series to be utilised and expanded by the saxophones in panel seven (A#, C, C#, E, and F), are amplitude modulated to reflect the visual, triangular modulation of the lines in the panel carving. This is a further attempt to reflect motion in an abstract manner.

C. (Panel 4). Time 03'50" to 06'10"

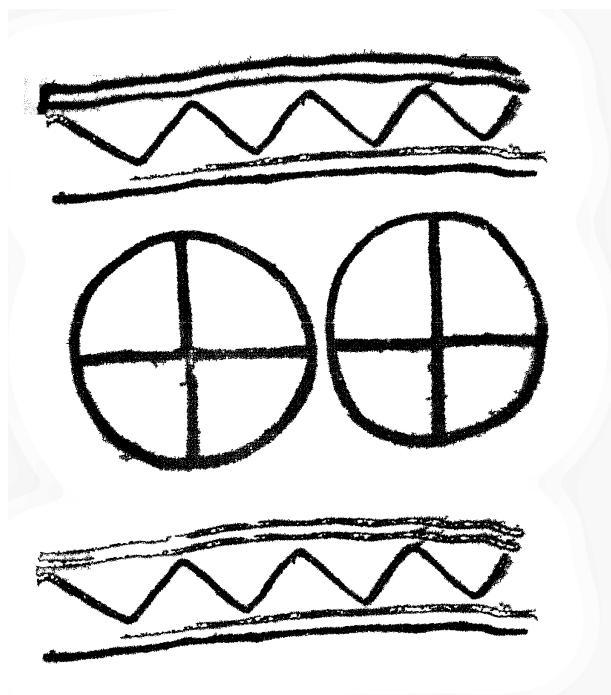


Fig. 2.30. Kiviksgraven Panel 4.

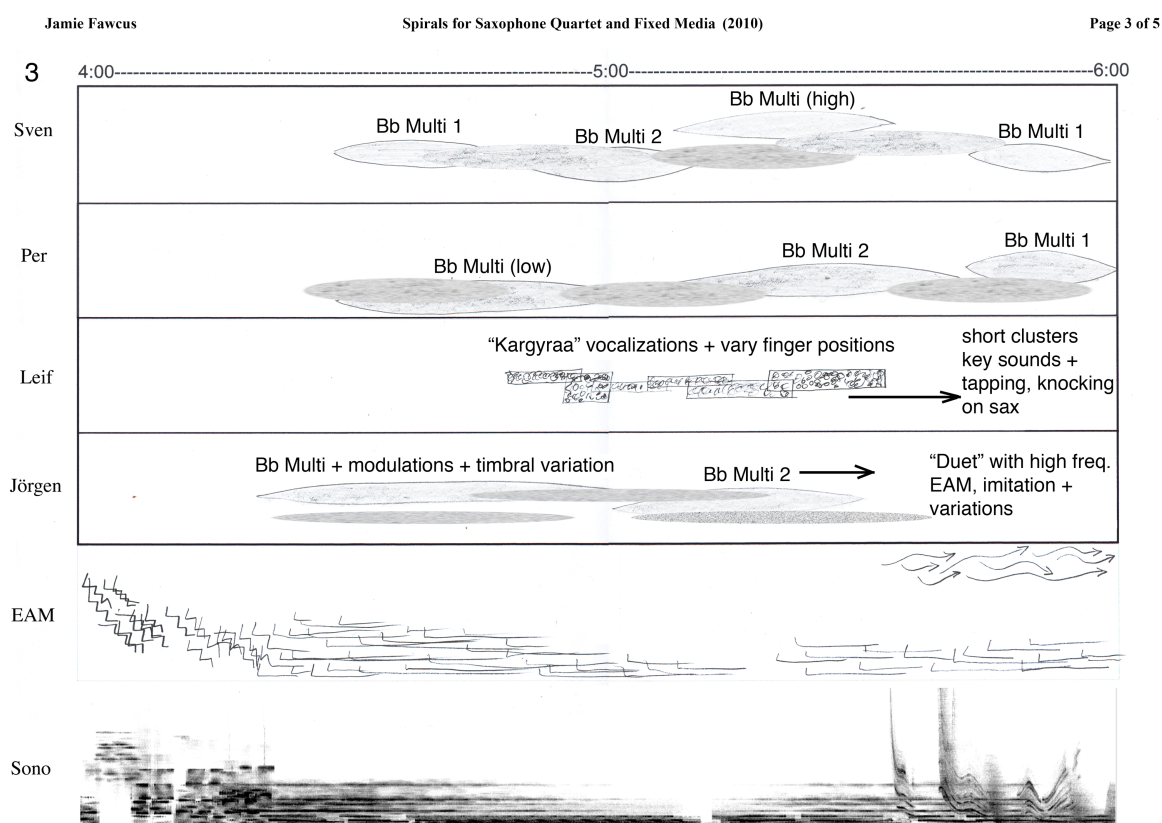


Fig. 2.31. *Spirals* page 3.

This fourth section of *Spirals* (see Fig. 2.31) is introduced by a series of high pitched, measured

phrases in the electronic part, (partially mirroring the zigzag or staircase shapes above and below the circular forms - see Fig. 2.30) cueing the saxophones to begin a cyclic movement of transformations between multiphonics of their choice. There is a diffuse tone centre of A# throughout the electronic part of this section, serving as a loose fundamental pitch around which the saxophones weave and improvise. The A# pitch is not intended as a rigid tonal centre, more as a springboard for the saxophones' exploration of the pictorial theme.

The dominating image in this section is of the two wheels, or solar/lunar discs often found elsewhere in Bronze Age art (for example the Trundholm sun chariot (Danish: *Solvognen*), discovered in Denmark and now displayed at the National Museum of Denmark in Copenhagen, or the sun disc buttons or broaches displayed in the National Museum of Ireland. These items have been dated to between 1200 and 2000 BCE). I interpreted these images in a number of ways. Firstly I felt the number of the wheels to point to a cyclic, undulating form for the instruments to follow, reflecting the solar and lunar cycles, and the sense of motion implicit in them. Secondly, the number two for me also suggested the use of multiphonics, or the use of sounds with two or more equally dominant pitches (as opposed to the idea of a fundamental pitch with overtones). The use of multiphonics provided a tension and energy for me, with the constant changes in tones and timbre in constant search for balance. Finally, the circular shapes suggested gestures with a smooth attack and decay; swells and undulations seemed appropriate rather than sounds with sudden attack and decay. Initially I reflected the zigzag lines sonically by means of a low frequency electronic bass part similar to the one used in the previous section but found the results to be unsatisfying. Instead, I used the images as a guide for the high frequency electronic part against which one saxophone improvises between 05'35" and 06'10". A further element that I decided to incorporate was a technique employed by saxophonist Leif Karlborg during one of my workshops with the saxophone quartet investigating experimental techniques. Whilst testing out multiphonic sounds for this section Leif suddenly began singing in the 'Kargyraa' manner - a low resonant throat singing similar to traditional Mongolian or Tibetan techniques, using the saxophone as an amplifying resonator. The result was so captivating and gave such an interesting variation on the existing use of multiphonics and overtones that I felt I had to include it. Through further workshops, we developed Leif's playing into a form that I felt gave a powerful and primeval quality to the section, bringing to mind rituals and chanting from ancient cultures around the globe, from Siberia and Mongolia to aboriginal Australia. The sounds also bring to mind those prevalent in Tibetan Buddhism, a philosophy that incorporates the wheel as a symbol and metaphor in its teachings, perhaps another happy coincidence seeing as the image of the wheel figures so prominently in this section.

D. (Panel 5). Time 06'10" to 07'20"

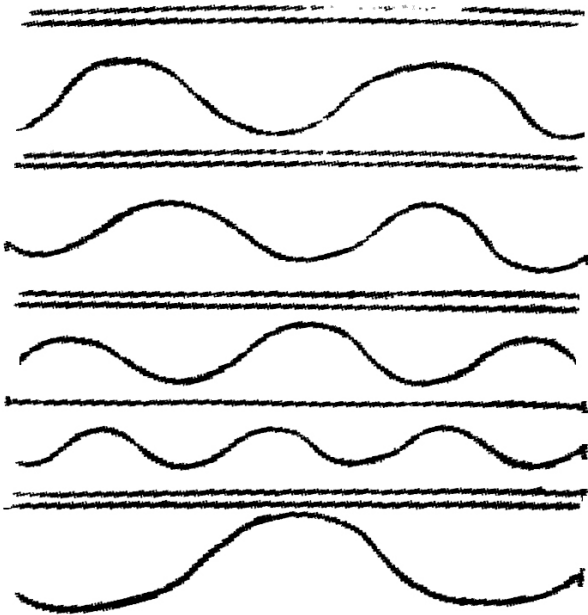


Fig. 2.32. Kiviksgraven Panel 5.

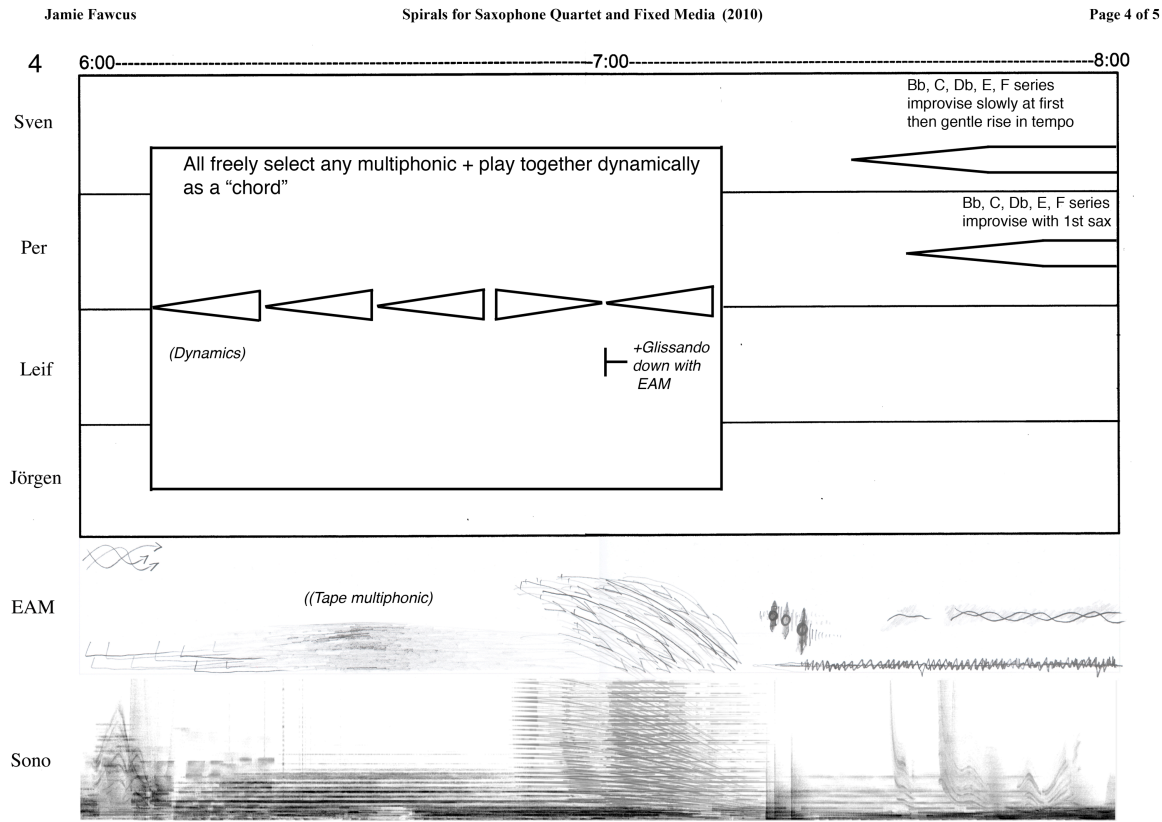


Fig. 2.33: Spirals page 4.

The next section functions as a continuation of and conclusion to the previous section, where the saxophones gradually stabilize and coalesce into a sustained ‘chord’ or cluster of multiphonics that follow the glissando down into silence in the electronic part, before the start of the next section (see Fig. 2.33). The original stone panel was badly eroded over time and the only forms that can be seen are the five curving lines separated by straight bordering lines present in my digitally ‘cleaned’ picture (see Fig. 2.32). I considered discarding the image altogether due to its lack of clear form, as with panel one, but retained it for two reasons: firstly, the shapes suggest a sustained yet complex sound, with a regular, stable pattern; secondly, there are five separated lines, a coincidental but pleasing representation of four saxophones together with a fifth electronic ‘instrument’. The compositional elements this panel stimulated also fitted well into the overall form, positioned (in time) in the middle of the piece, suggesting a plateau from which the piece could move in a new direction or begin to resolve in some way. This section of *Spirals* marks the end of the more sedate and abstract content of the piece and is a moment of calm before the more improvised nature of the following two sections.

E. (Panel 7). Time 07’20” to 08’55”

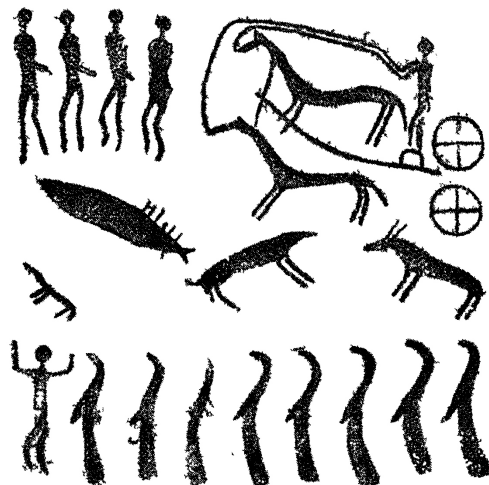


Fig. 2.34. Kiviksgraven Panel 7.

5 8:00-----9:00-----10:00

Sven		1.	2.
Per	V. slow "Cantus Firmus" Bb, C, Db, E, F series	All freely select one playing technique from any previous section, improvise together as you see fit	All freely select one playing technique from any previous section, improvise together as you see fit
Leif		(Dynamics)	(Dynamics) fade with EAM
Jörgen	Freely improvise around Bb, C, Db, E, F series		

EAM

Sono

(Tape Fades Out)

Fig. 2.35. *Spirals* score page 5.

The human figure appears in its first recognisable form in the part of *Spirals* based on panel seven, and the carvings themselves take on a more literal, less abstract form with images of people, animals and a chariot forming a scene that I at first associated with an agricultural theme (see Fig. 2.34). The placement of animals and what I first took to be wheat sheaves at the bottom of the image suggested a harvest or some form of agricultural activity. It was with this idea in mind that I formed a large part of the electronic sounds for this section. Later research and study of the image altered my interpretation of the image in panel seven to one of a ritual procession, with the 'wheat sheaves' representing cloaked and hooded figures being led by, or addressed by a separate figure on the far left. This ambiguity or disparity is one of the reasons I chose to let the musicians improvise within certain boundaries here. The image was at first open to at least two quite separate interpretations, so it felt appropriate that to a certain degree the quartet should have the freedom to explore their own interpretations of the image. The selection of the note series A#, C, C#, E, F (see Fig. 2.35) came from an initial desire to include a scale that took its influence from eastern and southern Europe and suggested influences from further afield than northern Europe (such as ancient Greece, as hinted by the enlarged 'omega' symbols found in the final section, further corroborated by archaeological artefacts from Greece found in other sites in Sweden - it is thought that early peoples in the north of Europe had a far wider trade network and contacts in distant lands than

previously imagined). There is also a reference to later Swedish folk music, where pentatonic scales and ornamentation reminiscent of music from North Africa and the Middle East are common (Lundberg and Ternhag 1996, pp.42-53). I was struck by this similarity between Arabic and Swedish traditional music when I first moved to Stockholm in 2001, and felt I wanted to include some reference to this in my first instrumental work.

F. (Panel 8). time 08'55" to 10'22"

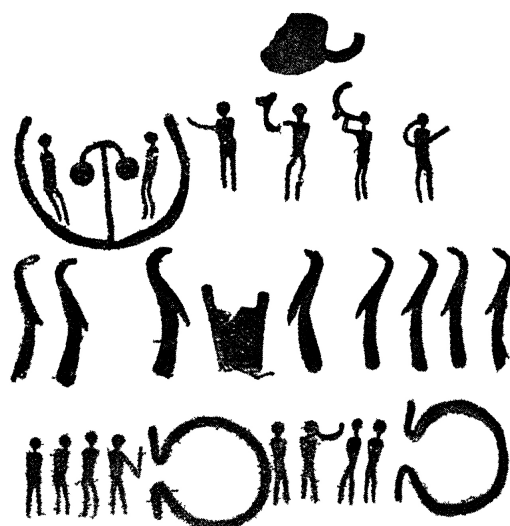


Fig. 2.36. Kiviksgraven Panel 8.

The final part of this piece posed some initial problems for me. At first I wanted to create a finale that summed up the entire process of composing *Spirals*. I worked initially with very complex and gestural electronic sounds that reflected the festivities or ritual celebration depicted in panel eight, which seems to include musicians, cloaked figures and other more abstract objects such as the two large ‘omega’ symbols at the bottom of the picture. I envisaged, at first, the saxophones providing abrupt stabs, squeals and fanfares that would provide a wild, abstracted mirroring of the visual image. After a series of experiments, however, I abandoned these ideas as I felt the material was becoming more and more contrived and stylised, having little or nothing to do with the ideas of ritual, abstraction and providing little sense of a culmination that I wanted to express. Eventually, I decided to let the saxophone quartet themselves partially interpret the ideas I had by means of a bounded improvisation, within a broad sonic guidelines and a structural framework I provided. The culmination of the piece became a set of instructions in which the musicians could choose one of the previous five sections and freely improvise around the material within that section, whilst simultaneously interpreting the images in panel 8 for themselves within that improvisation. In doing

this, I felt that the musicians of the saxophone quartet were connected somehow to the four musicians in the panel carving. I wanted the musicians to feel a connection with the people who created the Kiviksgraven carved panels, to identify and somehow ‘speak’ with their voices, or allow these long dead artists and musicians to speak through their instruments today. The entire piece can be seen as a progression towards, and aid to a state of mind for the musicians; a ritual in itself by means of which the saxophonists form an abstract bridge between their own histories and musical practice and the lives and art of their Bronze Age ancestors.

Fixed media

The sound material I used in the fixed media part of *Spirals* has much in common with the material used in the previous pieces in this compositional portfolio. The sound materials tend to favour the lower end of the frequency spectrum, are often blurred, indistinct and can be described as earthy, dark or noisy. Whilst operating within a similar frequency range (95Hz-112Hz) as that explored in *Resonances*, I think the choice of fixed media sound material metaphorically creates an atmosphere of weight, antiquity and age and conjures the rough stone surfaces, mounds and boulders of Kiviksgraven. Additionally, the sounds consciously mirror the natural sounds that would have dominated life over three thousand years ago: wind, rain, the sounds of the sea and beaches, (Kivik is near the coast) in combination with loosely pitched sounds and sounds with suggestive rather than distinct associations; hints of birdsong and animals, hints of music and singing. More synthetic sounds suggest worlds of the imagination more separate from the material world, yet still connected and blended with it during some sections of *Spirals*.

Spirals created a rich sound world that served as a strong starting point for my approach to instrumental music as a whole. Although *Clay Tablet* for balalaika orchestra required some different production methods and has a quite different character in many respects, the mood of the fixed media part, particularly the favouring of the lower frequency range, is similar. My experiences creating *Spirals* convinced me that a flexible, communicative approach to the performers and conductor would result in the best music. I feel now that an experimental workshop-based approach with the performers is a technique that I will employ in my future instrumental music.

2.6 *Clay Tablet*

(Balalaika orchestra and fixed media. 5'00", 2011)

Origins

As with all of the pieces in this portfolio, *Clay Tablet* takes its inspiration from ancient sources as a means to develop a concept and formal framework. In this instance it was one of the oldest notated pieces of music known - the *Hymn to Nikal* from approximately 1400 BCE. The piece was discovered and translated from clay tablets found in the early 1950s in the Syrian city of ancient Ugarit in what is now modern Ras Shamra. The title of this piece refers initially to the clay tablets on which the hymn was recorded.

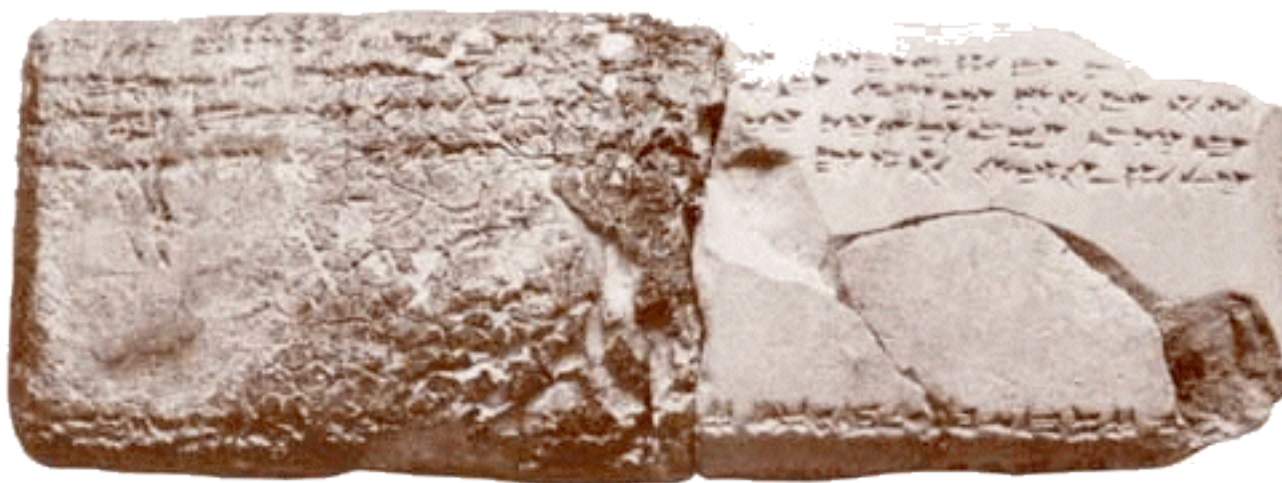


Fig. 2.37: The Ras Shamra Clay Tablets.

Choice of instruments

In 2010 I was fortunate enough to have received partial funding from the Swedish National Arts Board to compose a piece for the Strings of Russia Balalaika Orchestra in Yaroslavl, under the direction of conductor Evgenij Ageev. The orchestra had been invited to Sweden for a festival in the north of Sweden in July 2011, and the premiere was planned for this festival. *Clay tablet* is a short piece, originally included in a broader program of more traditional works and one other new work. Together with *Eclipse of the Moon* by Paulina Sundin, *Clay Tablet* was the first experimental work ever performed by the Strings of Russia, and both works were the first in Yaroslavl, Russia to include fixed electronic media in a work for balalaika orchestra. The concert promoters and conductor were perhaps justifiably cautious. Following the première, I decided that *Clay tablet* would be the first of three works that could be played separately or together as a larger connected work. The other two pieces, for solo balalaika and fixed media, and for balalaika orchestra and fixed media will be completed in 2012-13 and do not form part of this portfolio. *Clay Tablet* should be understood as the first movement of a larger work in which the ideas and themes introduced in

these opening part are further explored and expanded.

Although the Strings of Russia Balalaika Orchestra is a professional orchestra consisting of superb musicians who often play extremely demanding and complex works within a traditional repertoire, they were at the time of the premiere unfamiliar with much contemporary and experimental music that would perhaps be considered standard for western ensembles. This, and the fact that none of the members of the orchestra spoke English or Swedish presented additional difficulties and challenges in the realisation of my ideas.

During the spring of 2011 Paulina Sundin and I travelled to Yaroslavl for a few days in order to talk to Evgenij Ageev and meet the members of the orchestra in person. We also spent a day and a half (during breaks in their busy rehearsal schedule) discussing and explaining our ideas and how we might notate and execute them in the concert in July. I had decided early on to write the piece for fixed media and orchestra, as this was a format I was comfortable with, and created a connection with my earlier works such as *Spirals* and *Resonances*. The use of electronic part also allowed me to extend the palette of available sounds and create a platform to build the instrumental parts of the piece. I took the opportunity whilst in Russia to record many sounds and techniques from the orchestra to use in the fixed media part.

There are twenty instruments used in *Clay Tablet* in total. The arrangement is as follows:

- Prim domra (the domra is sometimes referred to as the Russian lute) x5
- Alto domra x4
- Bass domra x1
- Prim balalaika x3
- Second balalaika x1
- Alto balalaika x1
- Contrabass balalaika x2
- Bajan (Russian button accordion) x2
- Gusli (Russian keyed zither) x1

During the rehearsals and performance I also made use of the orchestra's percussionists, who with little prompting added considerable emphasis and extra richness to certain sections with judicious use of the wood block, cymbal and snare drum (marked in red on score), although there is as yet no notated part for the percussionist. During this initial workshop visit I also decided to take a similar

approach to notation as that employed in *Spirals*, in that I chose to use instructions, improvisation and experimentation together with a guiding score without too many specific intricacies or exact events within the notation. These ideas and techniques were employed over a three day period in Sweden, shortly before the première when I was able to discuss, experiment and test ideas with both the conductor and musicians between rehearsals for other concerts in the festival program (albeit within the limitations and availability of our translators Barbro Sundin and Tatiana Borovikova, both musicians active in another orchestra playing in the festival). As with *Spirals*, I was more interested in the process of experimentation and communication with the musicians and conductor than the delivery of a separately composed work to be performed.

Sound material and form

The nine-note progression of the *Hymn to Nikal* was initially stretched over the whole five minutes of the piece as a kind of tonal backbone. This progression formed a platform and overall progression that I constructed the rest of the electronic part upon, along with the subsequent instrumental parts. Originally, I envisaged the electronic part as a kind of timbral space within which the instruments would play a pitched, guided improvisation. This idea soon became mostly redundant as I felt I needed to compose more instinctively and spontaneously without a rigid framework in the fixed media part. My initial approach seemed to be leading me toward a more conventional tonal method that I was both unfamiliar and uncomfortable with.

After extensive experimentation, I reduced the use of the original melodic line to two instances at the start and end of the piece, forming an introduction and conclusion to the whole piece. I reduced the melody to a simple progression ascending in pitch to form a definite introduction and finale to the whole piece. The concept of the clay tablet itself developed into a more abstract concept; an idea that the whole piece is a kind of Tabula Rasa, or tablet of wet clay with partial imprints that the musicians and conductor would add to and improvise upon in order to realise the final piece. In common with *Spirals*, the actual process of creating the work became as important as the piece itself.

With regards to the actual sound material, I had become more interested in using broader ‘phrases’ consisting of percussive techniques, flageolet clusters or other unconventional techniques in the central sections of the piece and the unique sounds and textures they created. In common with the composition of *Spirals*, *Clay Tablet* was eventually composed in blocks, each presenting a different ‘room’ or physical space that related to other sections via the fixed media, or by timbral similarities or dynamic shape. The musicians were to be given instructional ‘palettes’ of sounds, and a broad

dynamic shape to work within, guided by the conductor to control and shape the overall form.

Fixed media

In constructing the fixed media part for *Clay Tablet* a number of questions arose. Should the electronic sounds be a compliment or contrast to the instruments? Should the sounds be homogeneous and ambiguous together with the instrumental sounds, or should they be distinct and discernible as a separate part or instrument in themselves? The sound of a balalaika orchestra is unique in comparison to a string orchestra or more common arrangements of instruments. The dominant sounds in a balalaika orchestra are those of the prim domra and prim balalaika, both plucked instruments with a sharp attack but a relatively rounded and soft tone overall. The domra is played with a plectrum, but the balalaika is played primarily with the fingernails strumming chords (apart from the bass and contrabass models where a plectrum is used on the entirely metal strings - prim balalaika strings consist of two nylon and one metal string). During my experimentation with the orchestra it became clear that the electronic part must in places blend with the orchestra but in others stand out in stark contrast in order to bring variation to the dominant sound of the plucked instruments. I wanted to work with the different instrumental sections 'unisono' as single sound sources or voices, with the electronic sounds serving partially as dividing signifiers between each section, hence the recurring loud electronic gestures between sections one, two and three. The orchestra is to me at its most sonically interesting when sections are used to create complex textures, akin to similar sections in the works of Gyorgy Ligeti and Krystof Penderecki, in particular where microtonal variations and extended techniques are employed. The three central sections of *Clay Tablet* in particular explore these techniques.

Influences

A particularly strong influence on this piece was Penderecki's *Threnody for the victims of Hiroshima* and Ligeti's *Atmosphères* and *Cello Concerto no.1*. These pieces appealed to me primarily due to their use of extended techniques such as striking the body of the instrument, playing behind the bridge and other unconventional approaches. Although these works were written for string orchestra, I felt many of the ideas within them, and sound spaces created could be transferred to a balalaika orchestra.

Clay Tablet can be divided into five sections, forming an overall 'arch' form in terms of dynamics and timbral complexity; the first and last sections are clear, defined and tonal, whereas the three central sections explore more free improvisational techniques and unconventional sounds from the instruments.

Part one: (00'00" to 01'00")

Jamie Fawcus
Tempo = 60

Clay Tablet for Balalaika Orchestra
2011

Page 1 of 5

seconds 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 1:00

+Percussion (cymbal) Crescendo + Diminuendo follows Balalaika Dynamics

prim domra
первая
домбра

alt domra
альтовая
домбра

bass domra
басовая
домбра

prim balalaika
первая
балалайка

sekund balalaika
вторая
балалайка

alt balalaika
альтовая
балалайка

contrabass
контрабасовая
балалайка

bajan
баян

gusli
гусли

The score is presented on a grid with a time axis at the top ranging from 0 to 1:00 in 4-second increments. The instruments are listed on the left: prim domra (первая домбра), alt domra (альтовая домбра), bass domra (басовая домбра), prim balalaika (первая балалайка), sekund balalaika (вторая балалайка), alt balalaika (альтовая балалайка), contrabass balalaika (контрабасовая балалайка), bajan (баян), and gusli (гусли). The first six instruments have musical staves with notes and dynamic markings: *ff*, *>p*, *<ff*, *>p*, *<ff*, *>p*, *<ff*, *>p*, and *<ff* (indicated by a dashed line). A red instruction at the top right states: '+Percussion (cymbal) Crescendo + Diminuendo follows Balalaika Dynamics'. The last three instruments (bajan and gusli) have empty staves.

Fig. 2.38: Clay Tablet score page 1.

Clay Tablet begins with a loose textured pulse made up of transposed recordings of the gusli or Russian keyed zither, suggesting the use of instruments later on and creating a dark unsettled atmosphere as an introduction to the piece. I had in mind dark rooms and secret rituals, reminiscent of the temples of ancient Babylon and Assyria, or the temple complex at Chavín de Huántar in the Peruvian Andes, a construction with remarkable acoustic properties perhaps exploited by their builders (Smith, 2011). I considered and tested more abstract sound sources and methods, but found this to be the best balance of atmosphere whilst simultaneously providing a perceivable link with the acoustic instruments. The entire orchestra enter at 1'20" playing the ascending pitches (see fig.2.38) ending with the whole orchestra playing a chord of two adjacent notes, ceasing abruptly with an electronic cluster made up of FM synthesis tones. Initially this section was scored *ff* for all instruments for the duration of the section, but I changed this to a series of swells from *p* to *ff* in order to give variation and forward momentum to what would otherwise be a dynamically static section. (ammendments are marked in red on the score). This whole section can be seen as the dramatic start of a rite or ritual process where the instruments attempt to give weight and meaning to the following sections and clearly mark the transition of the listener from the material to the more abstract or ritual world.

After the FM gesture fades away the next section is dominated by a simple drum pulse, supported by a diffuse background drone. This gives a structure and solemnity to the instrumental parts. Following this, the two bayan players have clusters of low tones (freely selected and interpreted by the musicians) that create a rather threatening atmosphere. The sound is to me reminiscent of the braying of large herd animals such as horses and cattle, or the distant sounding of European bronze lurs in a kind of fanfare. These sounds are reminders of the physical world and the period of time from which the piece takes its inspiration. I had little time to experiment specifically with the accordionist during the realisation of this piece and eventually decided to let him focus on two distinct techniques on which to improvise; firstly, the use of microtonal low clusters, and secondly unkeyed 'breath' sounds where the accordion reeds are bypassed, leaving the sound of air passing in and out of the bellows to be manipulated (not all accordions have the necessary valves or stops to facilitate this). These extended techniques added depth to the orchestral sound that was otherwise dominated by the plucked instruments and also allowed me to include sounds I would ordinarily incorporate into the fixed media part into the instrumental part. The accordion clusters occur at the beginning middle and end of this section (see Fig. 2.39) as a way of marking the passage of time and suggesting the constant presence of a more threatening, animal element behind the musical shapes.

Part two: (01'00" to 02'00")

Jamie Fawcus

Clay Tablet for Balalaika Orchestra

Page 2 of 5

Tempo = 60

2011

+Percussion (wood block) follows balalaika notation

The score is organized into nine horizontal staves, each representing a different instrument. A timeline at the top marks seconds from 0 to 60 in increments of 4, with a final 2:00 mark. The instruments and their notations are as follows:

- prim domra / первая домбра**: Features a series of horizontal lines with arrows indicating a rhythmic pattern. The notation includes *qn* (quasi nota) and *f* (forte) markings.
- alt domra / альтовая домбра**: Similar to the first domra, with horizontal lines and arrows, and *qn* and *f* markings.
- bass domra / басовая домбра**: Shown in a 4/4 time signature with a bass clef. The notation includes a *ff* (fortissimo) marking.
- prim balalaika / первая балалайка**: Features horizontal lines with arrows and *qn* and *f* markings.
- sekund balalaika / вторая балалайка**: Similar to the first balalaika, with horizontal lines and arrows, and *qn* and *f* markings.
- alt balalaika / альтовая балалайка**: Similar to the first balalaika, with horizontal lines and arrows, and *qn* and *f* markings.
- contrabass / контрабасовая балалайка**: Shown in a 4/4 time signature with a bass clef. The notation includes a *ff* (fortissimo) marking.
- bajan / баян**: Features horizontal lines with arrows and *ppp* (pianissimo) and *ff* (fortissimo) markings.
- gusli / гусли**: The bottom staff, which is currently empty.

Each staff also includes Russian and English instructions: "постукивать без определенного ритма по корпусу инструмента ногтями или плектрумом" and "Tap on the fingerboard of the instrument arhythmically with fingernails or plectrum".

Fig. 2.39: Clay Tablet score page 2.

Almost immediately after the accordion's initial gesture, all the stringed instruments in the orchestra perform two separate swells of percussive, non-rhythmic tapping on the fingerboards of their instruments. This sound is particularly striking when the musicians perform this as asynchronously as possible, creating an exhilarating cloud of clattering and tapping that suggests the tapping of chisels on stone or clay, the clapping of hands in dance or ritual, and the pattering of heavy rain on roofs or surfaces. Many of the techniques I employed in this work are attempts to conjure natural phenomena or hint at sounds and events outside the purely musical. The tension of these ideas against the formalised structure of the orchestra creates a sonic narrative of contrasting spaces and inertia in the mind of the listener, suggesting both abstract experiences and emotions and at the same time the primal energies of nature, the weather and natural cycles. These sounds, although unpitched, are to me very evocative and musical, and conjure excitement and energy combined with complexity and timbral depth.

The third section is introduced by a short sequence on the bass domra (again derived from the *Hymn to Nikal*), a second FM gesture and the return of the vocal-formant background drone. I conceived this section in particular as a transition to a wider or larger space and a more abstracted mental state in the mind of the listener/ritual participant. The initial playing of single strings behind the bridge forms a new cloud of sounds suggesting snow, ice, and light reflected and refracted by water or ice and more delicate structures. As with earlier pieces such as *Stoop* and *Spirals*, I envisaged a metaphorical inward journey further into abstraction and introspection, reaching its apex at 3'30" before 'turning around' and returning to the original theme from the beginning of the piece.

After the "playing behind the bridge" section (see Fig. 2.40) the next section consists of flageolets played at random from a given series of pitches. This provides a means of expanding on the previous section by allowing the musicians more choice in the execution of the arrhythmic clusters (more notes to choose from). Here again, I wanted to evoke a sensation of progression inwards toward more abstract and transcendent spaces within the mind of the listener/participant.

Part three: (02'00" to 03'17")

Jamie Fawcus
Tempo = 60

Clay Tablet for Balalaika Orchestra
2011

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seconds 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 3:00

prim domra
первая домбра

Pluck single strings arhythmically at random behind the bridge

Play flageolet arhythmically at random from series

pp *f* *pp* *f* *pp* *f* *pp* *f*

перебирать струны без определенного ритма за подставкой

играть одинарные флажолеты без определенного ритма по свободному выбору из серий

alt domra
альтовая домбра

Pluck single strings arhythmically at random behind the bridge

Play flageolet arhythmically at random from series

pp *f* *pp* *f* *pp* *f* *pp* *f*

перебирать струны без определенного ритма за подставкой

играть одинарные флажолеты без определенного ритма по свободному выбору из серий

bass domra
басовая домбра

ff

prim balalaika
первая балалайка

Pluck single strings arhythmically at random behind the bridge

Play flageolet arhythmically at random from series

pp *f* *pp* *f* *pp* *f* *pp* *f*

перебирать струны без определенного ритма за подставкой

играть одинарные флажолеты без определенного ритма по свободному выбору из серий

sekund balalaika
вторая балалайка

Pluck single strings arhythmically at random behind the bridge

Play flageolet arhythmically at random from series

pp *f* *pp* *f* *pp* *f* *pp* *f*

перебирать струны без определенного ритма за подставкой

играть одинарные флажолеты без определенного ритма по свободному выбору из серий

alt balalaika
альтовая балалайка

Pluck single strings arhythmically at random behind the bridge

Play flageolet arhythmically at random from series

pp *f* *pp* *f* *pp* *f* *pp* *f*

перебирать струны без определенного ритма за подставкой

играть одинарные флажолеты без определенного ритма по свободному выбору из серий

contrabass
контрабасовая балалайка

ff

+4 to 5 musicians vocalise bayan notation with "shhh" + "hiss" sounds

bayan
баян

Mechom Vozdush - "gusts of wind" from bellows, no discernable pitch

qn - *f* *qn* - *f* *qn* - *f*

имитация "порывы ветра" при помощи мехов, без определенной высоты тона

gusli
гусли

0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 3:00

Fig. 2.40: Clay Tablet score page 3.

After the flageolet swells comes the pivotal point of *Clay Tablet*, where the sounds consist only of the ‘breathing’ of the accordion and additional ‘shhh’ ‘sssss’ and other breath sounds vocalised by two other musicians (see Fig. 2.40). I initially wanted the two accordions to play this part alone, but only one of the accordions brought to Sweden could generate these sounds (the other lacked the necessary valves or stops) and the overall volume was insufficient to project into the audience in the concert hall, hence the addition of supporting vocalisation from other musicians. This pivotal point consists of the breath sounds alone, bringing to mind the listener’s own breathing, the breathing of others and the wider movement of air and wind in a moment of stillness. Here, the piece is reduced to sounds without discernible pitch or structural complexity, suggesting an ‘emptying of the mind’ or moment of realisation and silence before returning to a changed yet familiar reality.

Part four reintroduces the pitch shifted strings in the fixed media part that opened the entire piece, though here raised in pitch in order to instil more energy and ‘punch’ and allowing the contrabass balalaikas to be heard more clearly later on as they improvise around the fixed media. Included here are some FM gestures utilising bell like and metallic tones. These sounds provide a complimentary texture to the string sounds that have been heard earlier in the piece. I wanted to reference the sonorities of the opening of the piece but with the addition of new or altered elements, a feeling of returning and seeing things in a new light. In this section, the threatening sounds of the accordion from the first part are replaced by a crescendo of textures created by the musicians drawing the plectrum or their fingernails along the length of the strings (see Fig. 2.41). The effect is similar to that of the accordion clusters, but here more controlled and ecstatic.

After the climactic crescendo made up of sliding string sounds, the work returns to the shamanistic drum of the second section. The drum here is presented at double the speed of that in the first section, and is accompanied by FM textures first introduced in the previous section. Soon after the FM sounds are presented is a short gusli solo, where the musician is simply given the instruction ‘sweeping gestures, wind and rain’ (see Fig. 2.42). Here, the entry of the gusli signifies a change in the consciousness in the ‘participant’ - the drum representing the return to the outside world, and the gusli a new knowledge or experience carried along with it. The gusli also heralds the reintroduction of the entire orchestra in the final section, as it uses a more pitched sound that acts as a cue to the listener. I gave no pitch instructions in the score, so this section could equally have been noisy, chaotic and unconventional in nature, I left it up to the musician to interpret the instructions in relation to the overall sound of the orchestra in this performance.

Part four: (03'17" to 04'00")

Jamie Fawcus
Tempo = 60

Clay Tablet for Balalaika Orchestra
2011

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The score is organized into staves with time markers from 0 to 4:00 seconds. The instruments and their parts are as follows:

- prim domra / первая домбра**: Draw plectrum along length of strings, first slowly, then as fast as possible. *qn* (piano), *ff* (fortissimo).
- alt domra / альтовая домбра**: Draw plectrum along length of strings, first slowly, then as fast as possible. *qn* (piano), *ff* (fortissimo).
- bass domra / басовая домбра**: (Empty staff)
- prim balalaika / первая балалайка**: Draw plectrum along length of strings, first slowly, then as fast as possible. *qn* (piano), *ff* (fortissimo).
- sekund balalaika / вторая балалайка**: Draw plectrum along length of strings, first slowly, then as fast as possible. *qn* (piano), *ff* (fortissimo).
- alt balalaika / альтовая балалайка**: Draw plectrum along length of strings, first slowly, then as fast as possible. *qn* (piano), *ff* (fortissimo).
- contrabass / контрабасовая балалайка**: Imitate and improvise around electronic sounds. *mf* (mezzo-forte).
- bayan / баян**: Mechom Vozdush - "gusts of wind" from bellows, no discernable pitch. *qn* (piano), *f* (forte). +Percussion (wood block) gestures diminuendo. *f* (forte).
- gusli / гусли**: (Empty staff)

Fig. 2.41: Clay Tablet score page 4.

Part five: (04'00" to 05'00")

Jamie Fawcus

Clay Tablet for Balalaika Orchestra

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Tempo = 60

2011

seconds 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 5:00

All instruments follow dynamics: *qn<-----ff-----*

prim domra
первая
домбра

alt domra
альтовая
домбра

bass domra
басовая
домбра

prim balalaika
первая
балалайка

sekund balalaika
вторая
балалайка

alt balalaika
альтовая
балалайка

contrabass
контрабасовая
балалайка

bajan
баян

gusli
гусли

Gusli solo - sweeping gestures,
wind and rain

*+Percussion (cymbal) freely improvise
following balalaika dynamics*

*+Gusli freely improvise following balalaika
dynamics*

p mf f mp p qn

Гусли соло, широкий
жест-ветер и дождь

Fig. 2.42: Clay Tablet score page 5.

Conclusions

There are strong parallels between *Clay Tablet* and *Stoop* in that both partially represent a ritual process or personal mystical or religious experience. In *Clay Tablet* the means of presentation is more dramatic and less subtle than in *Stoop*, partially due the shorter length of the piece, but also the way in which I wanted to approach instrumental music. In *Clay Tablet* the gestures are bolder and the overall effect of the piece seems to me more in keeping with the ecstatic nature of certain shamanistic or ritual experiences. *Stoop* is more intellectual in its treatment of the ideas I chose to explore, whereas *Clay Tablet* is more immediate and pronounced in its delivery.

Clay Tablet was my first piece for a large ensemble and in common with many of my other works was largely a sonic experiment resulting from research ideas. I feel the composition of the piece was as much a journey of discovery for the musicians and conductor as it was for me, perhaps more so. All of us involved have been challenged and forced to explore new ideas and techniques, the working processes reflecting the themes of ritual, discovery and transformation just as much as the end result.

Clay Tablet is far bolder in its gestures and form than my electronic works. *Clay Tablet* certainly conjures a dramatic theatre for the imagination judging by the reaction of the public and their comments to me after the first performance. Conductor Evgenij Ageev made a comment in Russian to one of our translators after the first full rehearsal that she translated later as "the shaman speaks!" - I had not mentioned shamanism, ritual or any thoughts around such topics before the rehearsal, merely thoughts around experimentation and the Ras Shamra tablets. That Evgenij experienced such associations himself is a perhaps a good sign that the piece communicates at least some of the concepts I had in mind.

2.7: *Stone, Paper, Scissors.*

(Fixed media, 9'20", 2004 / 2012)

Origins

In 2004 I created a fixed media piece entitled *Scissors Paper Stone*. This work was largely realized at the electronic music studios (EMS) in Stockholm. The work uses the simple physical game of the same name as a compositional framework or rule system. Each of the three elements determines the nature of the sound material in each section, and the relations and transitions between them, depending on dominance or subservience of each in relation to the other (stone blunts scissors and therefore stone dominates, scissors cuts paper and dominates that, paper wraps stone, and so on).

I was unhappy with the resulting piece and wanted to rework what I felt to be good source material and an interesting compositional idea. The original piece contained many things that I have since developed further in my work, namely: ritual, metaphor and meaning, and the incorporation of outside contextual material - the piece uses texts and quotations by Buddhist writer and monk Nichidatsu Fuji and Mahatma Gandhi, both spiritual leaders and political activists whose ideas and writing continue to interest me.

Sound material

Stone, Paper, Scissors (the title is reversed in order to distinguish it from the earlier work) consists of three sets of initial sound material: stone, represented by clear, clangorous and ringing sounds created via FM or additive synthesis, referring to the 'singing stones' found at Uppsala and Gotland in Sweden, and representing a sense of solidity and order in opposition to more noisy and complex sounds. I chose not to use actual recordings of the ringing stones, as I was more interested in using the metaphorical possibilities of the words in relation to each other rather than a transformational process from concrete sound material. Paper is represented in two ways; firstly by the use of sounds with a large and complex overtone spectrum with little or no low frequency content – so called 'noisy' sounds that could be described as hissy, rustling, crackling, or fizzing. These sounds reflected both the sounds made by paper itself, and the complexity of written material presented on them. The second paper sound material is that of the human voice, both with its spectral qualities when whispered and the words expressed by it. I selected the vocal material by listening to loops of the stone and scissor materials whilst simultaneously recording sections of texts from the writings of Nichidatsu Fuji and Mahatma Gandhi. The vocal sounds were later heavily processed during the compositional process. I wanted to use an aleatoric method to select the texts and react to them spontaneously during the compositional process rather than select materials that may in some way

dictate or restrict my treatment of the sounds. Scissors are represented by sounds that could immediately be described as sharp or cutting – actual scissors created many of the recorded sounds, along with material sourced from knives struck and scraped against each other and against a sharpening steel. The scissor sounds are almost exclusively high frequency sounds with the bulk of the audible material above 4kHz, presented either as sharp, percussive events chopping in and out of the mix or as sustained, narrow frequency banded tones with a more sustained cutting character. The scissors material often signifies change between sections, or a change of emphasis from one aspect of the piece to another - change that can be both destructive and creative in the introduction of new material or in the breaking down of the boundaries between different sonic themes and metaphors, creating ambiguity.

Structure

My original idea for this piece was to play with the tensions between the sound materials both in their spectral content and with the metaphorical themes I had chosen them to represent. My original concept was for the piece to begin with a sense of stability and regularity, a sound world where it is hard to make yourself heard against the weight of established forms and structures. Later the ‘paper’ voice becomes heard more clearly as the need for change (musically and metaphorically) becomes more relevant. At the same time, the ‘paper’ cuts and chops, breaking up sounds and becoming the scissors; a vital force for reordering and change, but at the same time a destructive element that ushers in a sense of instability. The work continues with the three elements jostling and interacting to gain dominance over the others, eventually resulting in a transformed set of sound materials representing the process of history, or the products of dialogue and conflict, or even just the fundamental Buddhist principle that nothing is permanent but change.

Many aspects of this original structural idea remain in the new version of the piece. The tension between the sound materials remains and the contrasts between the three sound materials and the process of transformation between them is still a driving force. The new piece differs in that the sounds are given more time to evolve and develop, the sections are more clearly discernable, and as a result, the form is more musically coherent than the original. The first version of this work was cluttered and unclear in its form, and in retrospect I relied too much on the listener understanding the metaphorical content that was clear to me, but ambiguous, confusing or absent to the listener unfamiliar with my compositional ideas. The new work presents my ideas in a clearer manner and allows the listener to draw their own conclusions and interpretations, and be able to hear the interrelation of sound materials as absolute music unconnected to metaphorical themes – though still informed by the title.

Stone, Paper, Scissors can be divided into five sections:

Part 1: Stone (paper) (00'00" to 02'15")

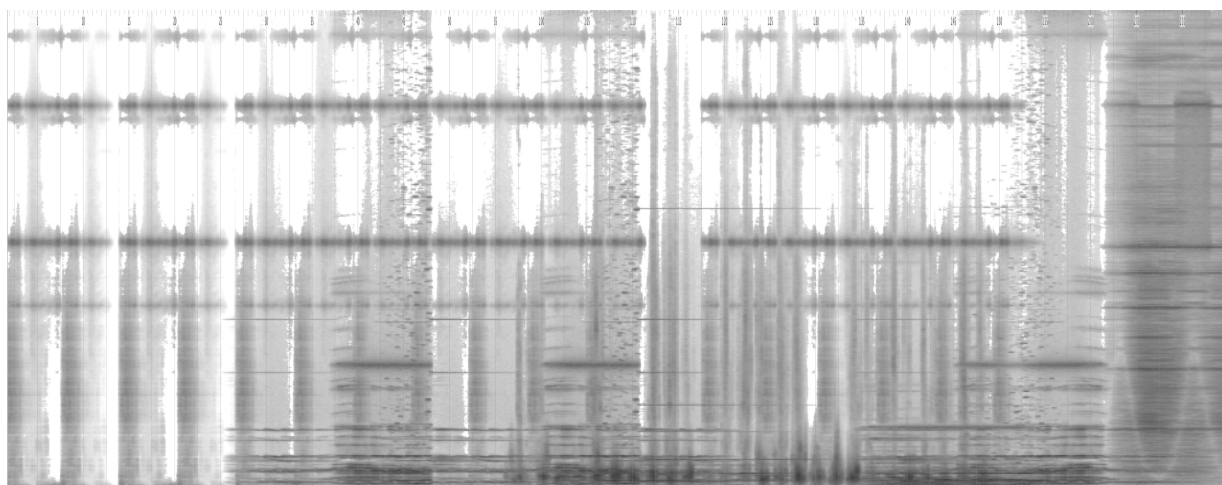


Fig. 2.43: *Stone, Paper, Scissors*. Sonogram 00'00" to 02'15".

Stone, Paper, Scissors begins with a slow low frequency beating, almost too slow to be perceived as a beat at all, accompanied by partially repeating high frequency gestures hinting at whispered speech and rustling paper or leaves. This long repeating cycle of gestures is joined by more complex FM textures reminiscent of bells or ringing ceramics and stone, together with fragmented speech and distorted breath sounds, eventually transforming into sharper high frequency textures at 02'15". In this section 'stone' is the dominant theme, represented by the steady repeating pattern and smooth tones of the FM synthesis. Musically, the section is stable and regular, but with unsettling undertones that hint at the transformations presented later in the work. The human sounds and speech are dominated but audible, as if constrained by the larger structure; allowed space to breathe but often drowned out by the initial material.

In this initial section I wanted to present a calm aural space that contains meditative and contemplative elements created by the smooth, sustained textures and clarity of the sound material. The whole section is unhurried, settled and stable, with the regular bass pulse representing a foundation upon which the other sounds rest. Emotionally, the section is peaceful and content, but with a slight air of menace due to the mildly discordant nature of the FM and additive synthesis textures. Around 1'00" another 'stone' texture appears, reminiscent of gravel or pebbles on a beach, suggesting a move from stable foundations to a more unstable, moving element leading to the more dynamic scissor and paper textures later. The slow, rolling pulse underpinning the sound material hints at the rhythmic pattern of the physical game with it's repeated hand movements, slowed down

to an abstract repeating phrase.

In contrast to *Stoop* or any of the other works presented in this portfolio, partially repeating pulses are used throughout the *Stone Paper Scissors*. Repetition of sound material is used in a more obvious and transparent manner than in my other works, an aspect I felt I wanted explore further in later works, together with other aspects of rhythm. Pulsing or repeating sounds are used throughout this work as a constant reminder of the game on which it is based, and as a partially hypnotic element reminding the listener of the meditative calm the sound material often struggles against.

Part 2: Scissors (paper) (02'15" to 04'34")

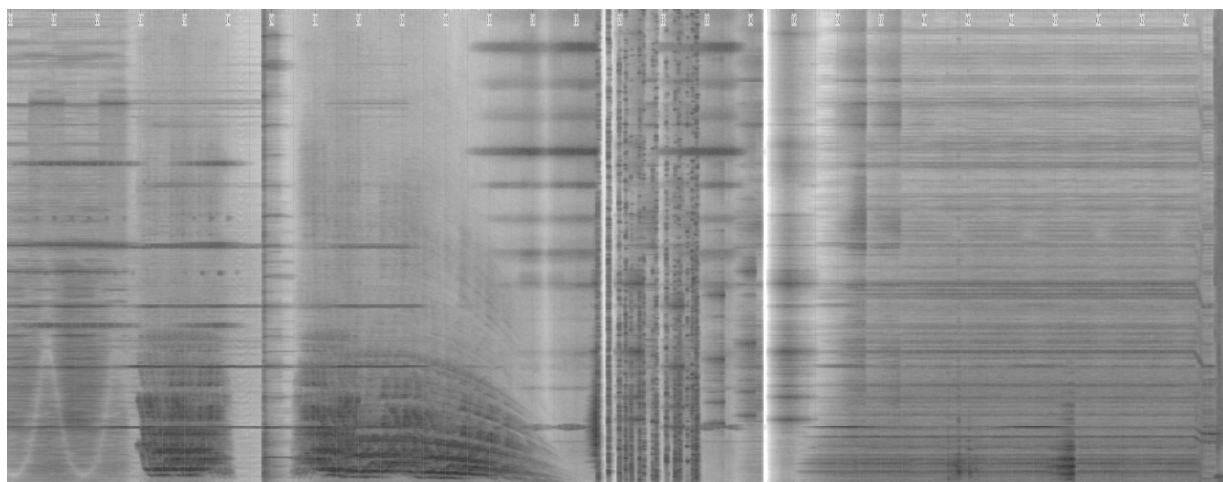


Fig. 2.44: *Stone, Paper, Scissors*. Sonogram 02'15" to 04'34".

‘Sharpness’ is the overall feeling that characterizes this next section. This is conveyed by removing practically all low frequency sound in favour of the high frequency material that represents the scissors. Initially the high frequencies are sustained and unsettling more than sharp. These sustained tones transform into material sounding not unlike harsh whalesong or abstract screaming voices. Here, the human voice of the ‘paper’ theme is dominated and changed by the sharp and unsettling nature of the ‘scissors’ material. Throughout this piece I wanted the metaphors to freely suggest to the listener emotional, political or purely abstract tensions and oppositions; the scissors may represent political repression, or psychological stress, the ‘paper’ voice a personal experience or broader human predicament with which to relate to. The listener is free to interpret as she sees fit, with or without the assistance of a program note for reference.

After the voice/whalesong section comes a passage dominated by a sound more directly associated with the scissors. The harsh, cutting, chopping and abrasive sonic characteristics of the scissors material is juxtaposed with more sustained gestures in the high frequencies. These sustained

elements are timbrally harsh but also contain the smoother noise spectrum of the ‘paper’ theme. The sound is similar to the sustained sharp sound at the beginning of this section but is transformed and smoother, eventually dominating the ‘scissors’ material (that returns in a weaker form at 04’03”). The ‘paper’ sounds that follow initially form a phrase of differing pitches before settling onto a sustained texture that heralds the beginning of part 3.

Stone Paper Scissors is in many respects sparser in content than my other fixed media works, containing passages where only two or more discrete musical forms are audible, in contrast to a more multi-layered sound in *Stoop*, where individual ‘parts’ are indistinct and form more of an audible landscape expanding and contracting in and out of the listeners attention. For example between 03’08” and 04’00”, the sharp, percussive scissor sounds occur simultaneously with a smoother, stepped passage in a narrow frequency band, occasionally expanding into an additional third ‘part’ with a slightly different timbre. I wanted to suggest a meditative state that is constantly disturbed or interfered with by external forces; a struggle against distraction or an observation of a mind arranging it’s own thoughts and drifting in and out of concentration. *Stone Paper Scissors* differs from *Spirals* both in the choice of sound material and structure. *Spirals* has a far more organic sound, with less distinct material than *Stone Paper Scissors*, reflecting noisy, natural sound environments as opposed to the clearer, more defined material in the later work. Structurally, *Spirals* also displays an organic, flowing character, with the instruments moving in and out of the electronic sounds, complimenting or opposing them at different points throughout the work. *Stone Paper Scissors* consists of different musical ‘parts’ or ‘lines’ existing simultaneously, sometimes only one ‘part’ is present, sometimes three or four existing in different frequency bands (for example, between 00’00” and 01’50” the bass ‘part’ begins, soon joined by the FM synthesis tones, followed by the vocal fragments, and finally by the rough, gravel sounds - four different parts interacting with each other whilst retaining individual clarity).

Part 3: Paper (scissors) (04'34" to 06'30")

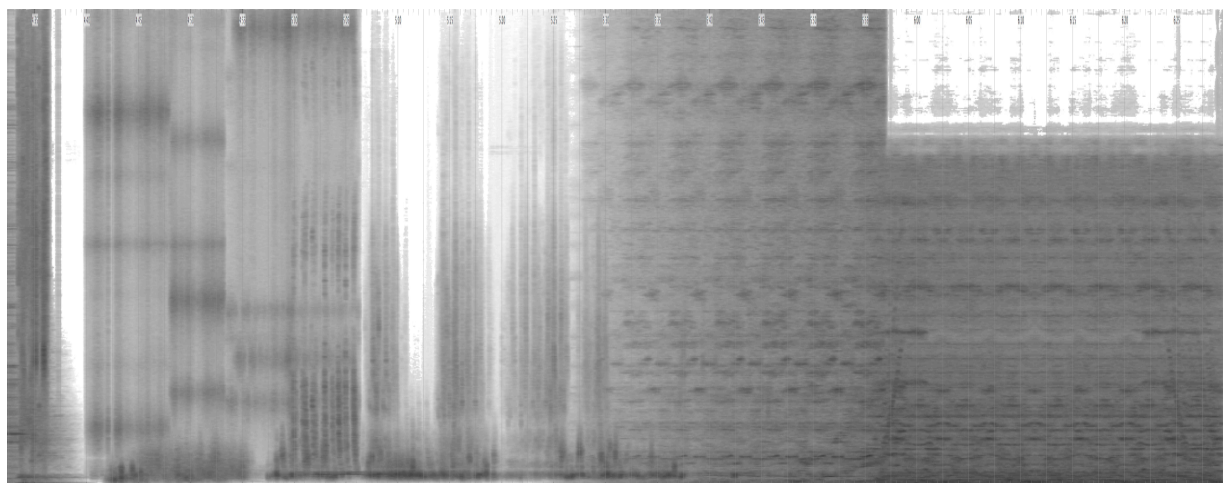


Fig. 2.45: *Stone, Paper, Scissors*. Sonogram 04'34" to 06'30".

A fragment consisting of all three sound themes opens part three. This section, occurring at the centre of the piece, creates a crux or fulcrum around which the whole structure is balanced. The sonic themes of scissors and paper are present again, this time in opposite roles; paper is dominant and scissors dominated. The sound material is noisy and rustling, suggesting paper, whispering voices and more real-world natural sounds such as running water, rain and wind. The sharp sounds of the scissors theme occur as complimentary ornamentation to the 'paper' material, being neither harsh nor threatening. The voice is featured more prominently in this section than in any other – fragments of Mahatma Gandhi and Nichidatsu Fuji's text interplay with the processed sounds suggesting a dialogue and discussion. At 05'30" the sounds transform slowly into more sustained and threatening textures containing sharper sounds from the 'scissors' theme, creating a build up of tension, the breakdown of communication and the roar of the modern city.

In the original piece *Scissors Paper Stone*, the whispered recordings of my own voice reading from the randomly selected texts are much louder, with individual words and phrases audible and intelligible. While this gave an additional dimension to the abstract material, I was unhappy with the way the recorded speech fit in the overall form and character of the piece. Though the spoken words were evocative and in character with the theme and atmosphere of the piece, I felt they distracted from the musical clarity and interplay of the sound material. I felt the words would force the listener to interpret the piece based on the character of my voice and my delivery of the various fragments of text, which in the original piece seemed appropriate, but later on I felt this to be a distraction from the sounds and structures within the revised work. I preferred to let the whispered voice exist as a more abstract and suggestive element. Although the program note for *Stone Paper Scissors* also contains information and extra-musical images and ideas about how I composed the

piece, I felt they gave an optional introduction to the music, and left the actual piece self contained and open to interpretation without including verbal ‘cues’ that the listener could not ignore.

Part 4: Paper (06:30 to 07:50)

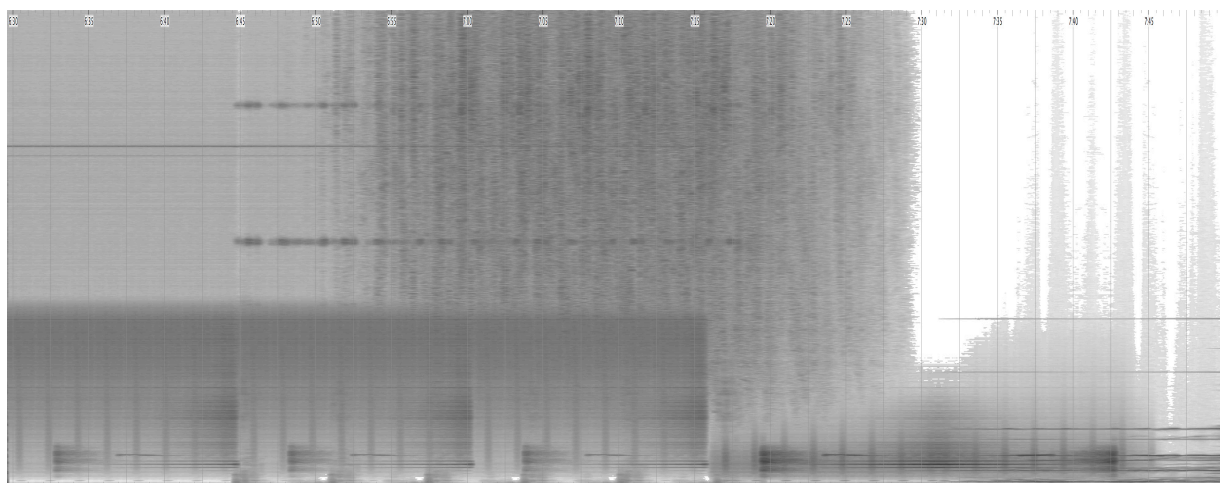


Fig. 2.46: *Stone, Paper, Scissors*. Sonogram 06'30" to 07'50".

The complex, loud texture of the previous section gives way suddenly to a much quieter and spectrally narrower repeating pattern that resembles vinyl surface noise. ‘Paper’ dominates this section in a different sonic form, one still characterized by a noise-based spectrum, but here suggesting the recorded voice, recorded music, the early forms of recording and the spaces between intentional sound and accidental/incidental noise. High frequency textures drift along suggesting the previously dominant scissors sounds, only here softened and transformed to compliment the paper textures. Also present are sine tones that sonically point to a return to the stone theme at the beginning of the piece. A Japanese temple block appears in this section, hinting to the texts of Nichidatsu Fuji and Mahatma Gandhi – the block evoking Japanese Buddhism and the quiet introspection of meditation at the heart of Buddhism. A feeling of calm is created by new sound material different from those used at the start of the piece, suggesting a transformation of the scissors and paper sounds into material complimentary to the stone sounds. The conflict of materials and ideas is perhaps resolving through an acceptance and communication between them. This section in particular demonstrates a development in my composition. In *Stone Paper Scissors* sounds are often allowed space to be heard, and even when combined with others can be distinguished and appreciated within the overall form of the piece.

Part 5: Stone (scissors) (07'50" to 09'10")

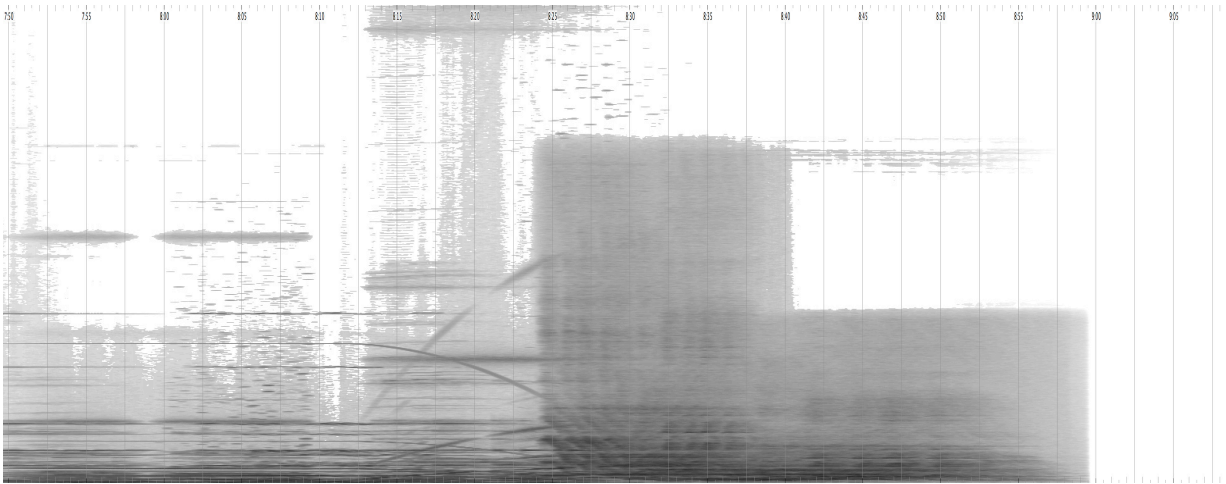


Fig. 2.47: *Stone, Paper, Scissors*. Sonogram 07'50" to 09'10".

Stone, Paper, Scissors concludes with a return to the sound world of the first two minutes of the piece, transformed and refined further to incorporate an altered version of the whalesong phrase from the second section, here resembling the human voice even more than previously, through transposition and filtering. In this conclusion the stone and scissors sound materials are timbrally closer and more ambiguous in their form. The scissors no longer cut and shear across the other sounds, and the stone by its nearness to the transformed scissors feels less stable and ordered than before. The piece has changed the perception of both the spectral and metaphorical content of the material.

The sound material in *Stone Paper Scissors* is more varied than in many of the other works presented in this portfolio. I have moved away from a 'bass heavy' sound in this piece, focusing instead on contrasts and changes in sound material that may be drastic, but remain consistent with the character of the whole work. I consciously included sounds that more obviously loop or repeat within a short space of time for two reasons: firstly in order to reflect the rhythmic nature of the underlying game, and secondly to experiment with repetition as an aid to appreciating the meditative or hypnotic nature of this piece. I used abrupt changes in sound material that nonetheless maintained a looping, pulsing nature in order to explore these ideas of continuity and change within a structure (for example, the transition from an overwhelming 'wall of sound' at 06'29" to a narrower, quieter and subdued passage).

Stone Paper Scissors is perhaps more of a musical meditation than a ritual. In works such *Stoop*, *Resonances* and *Spirals*, my intention was either to create a ritual specific to the performer and concert event, or to reflect a ritual through the eyes of an imaginary participant. *Stone Paper*

Scissors is more reflective than *Stoop*, which takes the form of a narrative or journey for an imagined ritual participant. *Stone Paper Scissors* has a direction, but less of a narrative; the game of scissors paper stone functioning as a guiding set of rules or interactions that impose themselves on the material, implying that the game may take an entirely different course to that laid out in the musical structure due to the dynamic nature of the game play. *Stone Paper Scissors* has the potential to develop into a series of new works based on this set of game rules, in particular within framework of a live performance, where the game rules dictate a bounded improvisation with multi-layered interaction and interpretation between the performers, or between the performer(s) and a reactive computer program.

Chapter 3: Conclusions

Between 2008 and 2012 my musical output has both changed and expanded in a number of ways. My work up until 2008 consisted entirely of fixed media works for presentation in concerts, with the occasional mixed media piece. During the last four years I have composed fixed media works, works for solo instrument and fixed media, saxophone quartet, balalaika orchestra and performed planned and spontaneous electronic works and improvisations with an array of tools including samplers, signal processing, feedback networks, found objects, microphones and live feeds from other performers. This expansion came about for three reasons: firstly, my dissatisfaction with the fixed media format as a stimulating and inspiring way of presenting ideas and as a performance paradigm (diffusion over multiple loudspeakers being the only real way the composer can ‘perform’ a work, a method I found increasingly uninteresting at the time). Secondly, my desire to engage in experimentation and to challenge my own boundaries, preconceptions and habits in creating music – new forms of expression such as live performance, partially steered performance situations and a concentration on the moment have allowed me to explore avenues of expression I had previously not been able to access. Lastly, I wanted to work with other people: working in isolation in the studio had, I felt, become uninspiring and restrictive, collaboration and performance being a direct antidote to this lack of inertia.

As a result of these experiments and ventures into new techniques I have developed as a composer of both fixed media works and performance works. *Resonances* allowed me to think in terms other than the absolute musical result; the score and fixed media part of the work are defined, but the interpretation and performance of the musician can vary drastically with each performance. In this way the work becomes a temporary aural ritual or occasion unique to each performance, which has in turn made me question my role as composer – the composer becoming more a facilitator or arranger of potentials rather than a creator of a fixed sound document. The same is true of *Spirals* and *Clay Tablet*. Both works have the same result; a created aural, emotional and intellectual ‘space’ that can alter and develop with each performance whilst retaining an overall character and sonic ‘footprint’. I continue to develop these ideas and intentions with a new work for the Stockholm Saxophone Quartet to be presented May 2013, and with planned works for sub contra-bass recorder and electronics, voice and electronics and percussion and electronics.

As a performer myself I have moved from experimental and spontaneous works inspired by the spirit of the moment towards a more considered approach where spontaneous events or elements in a performance are incorporated into a larger over-arching framework or idea. My intention is to

develop the performance of electronic music in a ritualistic manner that I feel I have only begun to explore fully. My work with the Spiral Cycle duo in particular allowed me to hone my senses and musical ear so that I could both react and respond to another performer, but also feel able to engage in spontaneous experiments and pursue unpredictable methods such as randomly generated sequences of samples, unpredictable feedback signals and the behaviour of previously untested instruments and objects (such as metal bowls in the solo work *Waterworks* or the long springs in the solo work *Twine*). The Spiral Cycle project is planned to continue in the spring of 2013, and my solo electronics work continues to develop. I now see my performances as sonic rituals that bring together disparate elements and techniques, both prepared and unprepared. The resulting event is both an explorative or experimental journey into my own mind and ideas, but can also be an attempt to interpret external themes and concepts such as the shamanic ‘voice’ in *Twine*, or the displaced individual and distorting lens of the media in *Improvisation 1*.

The initial driving force behind much of the work in this portfolio has been my interest in archaeoacoustics and the idea of sound and ritual within the ancient stone chambers described in chapter one. My interest in this field remains, but has expanded to include the role of the composer and performer as latter day shaman, a creator of virtual, sacred and inspirational sonic spaces that could hopefully inspire and expand the experience of both the performer and listener. In *Essential Economics* and *Twine* there is, I feel, a definite sense of travelling and exploring abstract spaces, and in *Improvisations 1* and *2* a more personal, introspective approach perhaps reflecting the lack of an audience during the creation of these two works. Both *Resonances* and *Spirals* transform the musician performing the piece into a shamanic figure, interpreting and improvising with prearranged material in order to capture and reinterpret images from the past.

Finally, I have been able to return to fixed media composition with a new interest and more developed compositional technique. In *Stone Paper Scissors* I feel I have been able to exploit many of my experiences in live performance; the importance of allowing sounds and passages in a piece to ‘breathe’, and to use silence, spacing and pauses for effect, emphasis and clarity. My performance experiences have also re-kindled my interest in multichannel diffusion and composition; an element I will be including more deliberately in my future electronic works.

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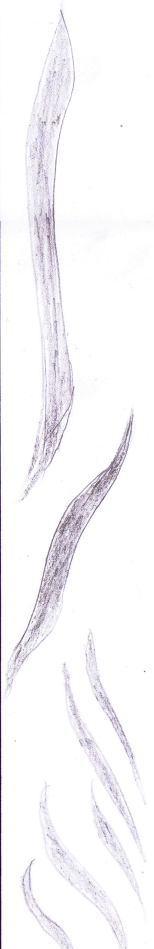
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1 0:00-----1:00-----2:00

Sven

(Waves
and wind)



Per

(Wind)



Leif

(Waves into
pebbles on
the beach)



Jörgen

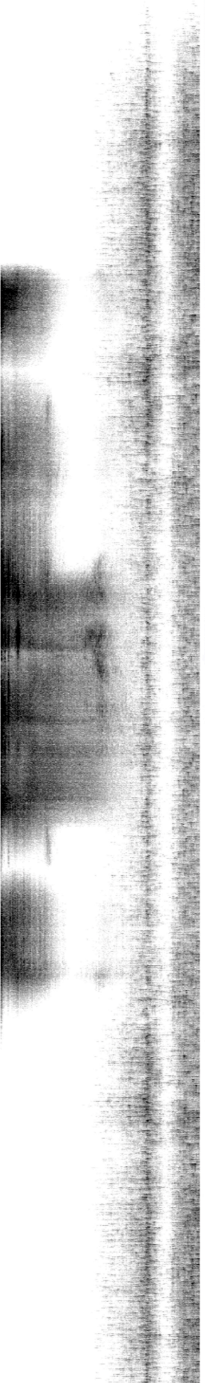
(Wind,
gusting in
trees)



EAM



Sono



Appendices:

Appendix 1a: *Spirals* score page 1

2

2:00

3:00

4:00

Sven

Rhythmically improvise over pulse, strike bell + other parts of sax with fingernails, sparse but definite

Per

Rhythmically improvise over pulse, strike bell + other parts of sax with fingernails, sparse but definite

Leif

Sparse percussive pulse with variations, T=120
(clicks, thumps, "cha" "puh" "tuh" "kuh")

Jörgen

Sparse perc. improv. over pulse, gradually taking over pulse
T=120 (clicks, thumps, "cha" "puh" "tuh" "kuh")

EAM

Sono

3

4:00

5:00

6:00

Sven

Bb Multi 1

Bb Multi 2

Bb Multi (high)

Bb Multi 1

Per

Bb Multi (low)

Bb Multi 2

Bb Multi 1

Leif

"Kargyraa" vocalizations + vary finger positions



short clusters
key sounds +
tapping, knocking
on sax

Jörgen

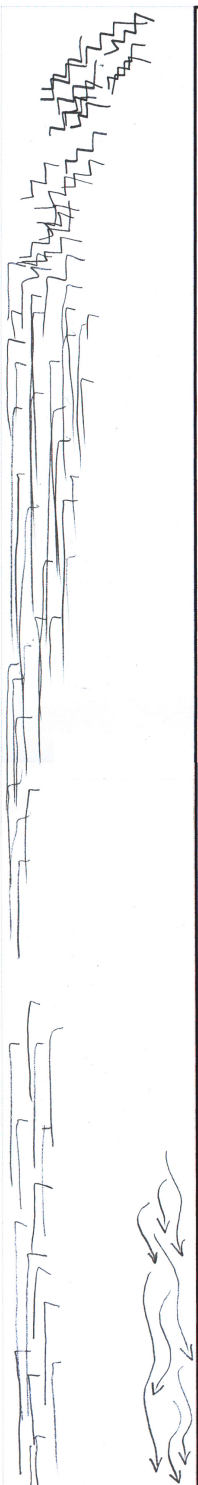
Bb Multi + modulations + timbral variation



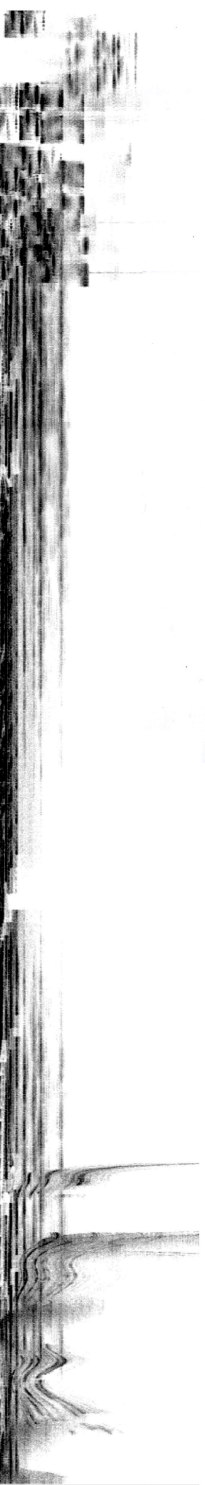
Bb Multi 2 →

"Duet" with high freq.
EAM, imitation +
variations

EAM



Sono



4 6:00-----7:00-----8:00

Sven

Bb, C, Db, E, F series
improvise slowly at first
then gentle rise in tempo

Per

Bb, C, Db, E, F series
improvise with 1st sax

Leif

(Dynamics)

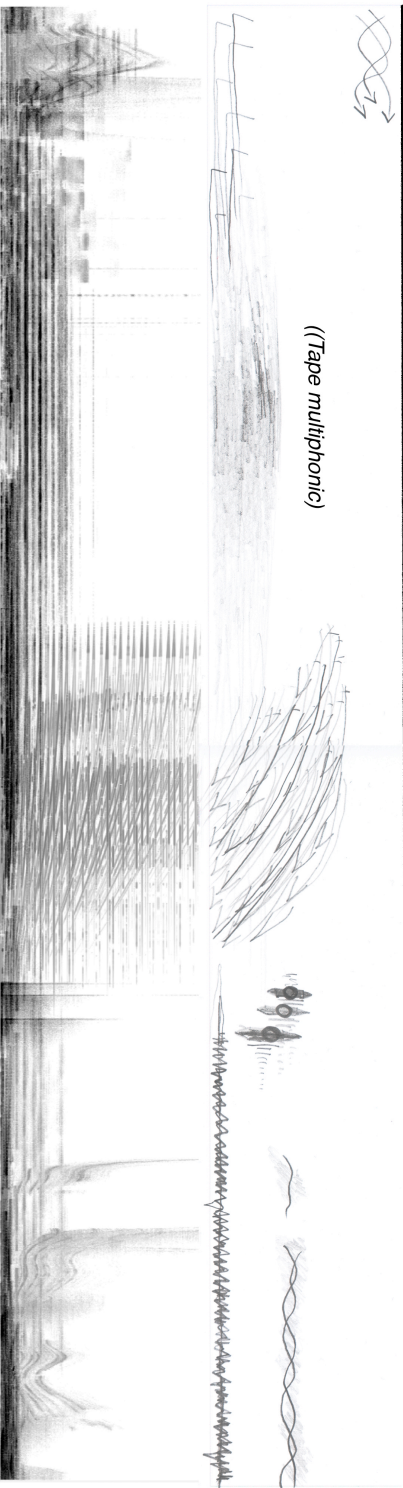
+Glissando
—
down with
EAM

Jörgen

EAM

((Tape multiphonic))

Sono



Jamie Fawcus

Spirals for Saxophone Quartet and Fixed Media (2010)

Page 5 of 5

5

8:00-----9:00-----10:00

Sven

1.

All freely select one playing technique from any previous section, improvise together as you see fit

2.

All freely select one playing technique from any previous section, improvise together as you see fit

Per

V. slow "Cantus Firmus" Bb, C, Db, E, F series

(Dynamics)

(Dynamics)

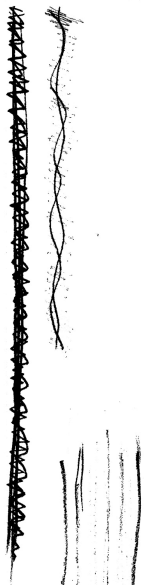
tade with EAM

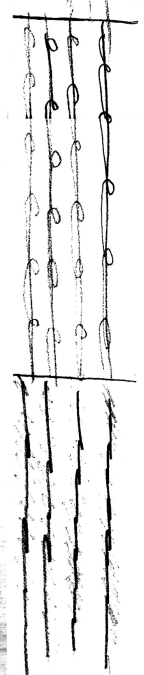
Leif

Jörgen

Freely improvise around Bb, C, Db, E, F series


EAM






(Tape Fades Out)

Sono





Resonances for Theremin and fixed media(2010) by Jamie Fawcus

Theremin

00:00 to 01:23
Theremin silent

Theremin silent

01:23

Cue 1: sounds become more harmonically complex
more high frequencies

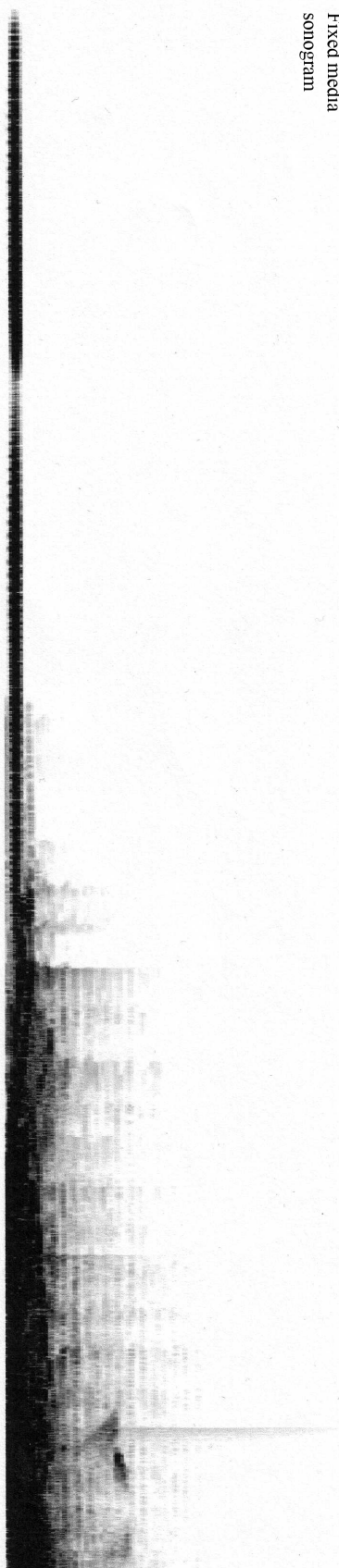
Theremin plays lowest possible frequency + microtonal slow gliss.
stack frequencies into layers

 dw

f

Notes/comments

Fixed media
sonogram



2:00-----3:00-----4:00

Theremin

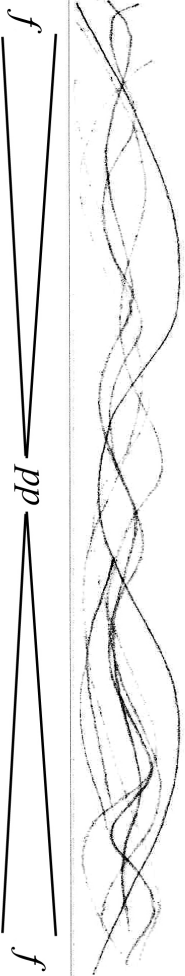
More variation in theremin sound; more high harmonics,
aircraft propeller drone, mild distortion

03:17

Cue 2: high bell sound, 7 repeats
theremin fades out

03:22 to 04:05

Theremin silent



Notes/comments

Fixed media
sonogram

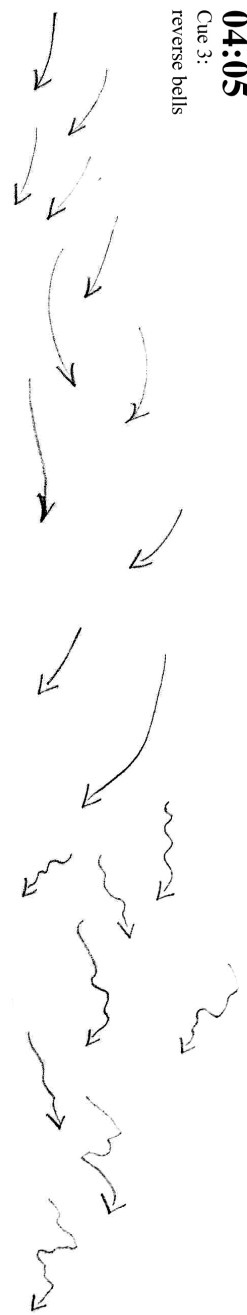


4:00-----5:00-----6:00

Theremin

04:05

Cue 3:
reverse bells



Theremin begins short
“whale song” gestures,
high frequency at first,
then free pitch variations

Transforms to more abstract,
short melodic fragments

05:48

Cue 4: Bass drum polyrhythm

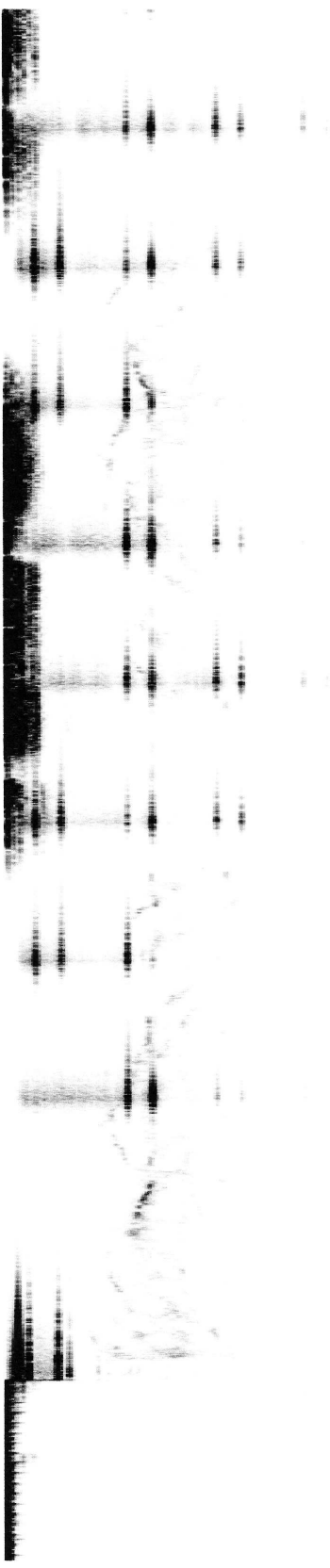
05:50 to 06:05

Theremin silent

Notes/comments

Free dynamic gestures (< >) between “p” and “mf” → *qn*

Fixed media
sonogram



6:00-----7:00-----8:00

Theremin

mp



07:48
Cue 5: Muffled
clattering

Highest possible frequency gestures
+ microtonal clusters

Progressively becomes a single layer
or texture



07:50

Theremin begins free
improv. against
fixed media

mp



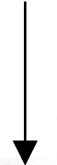
f



pp



p



Notes/comments

Fixed media
sonogram



8:00

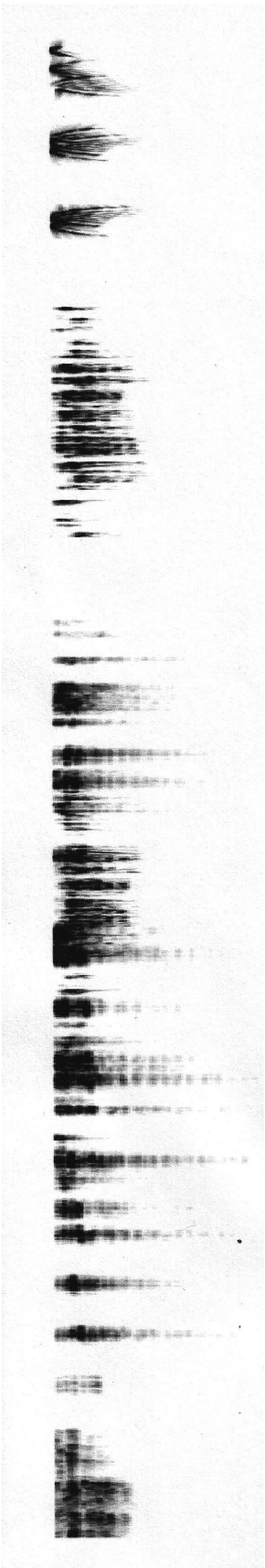
Theremin

9:00

10:00

<div>08:00 to 09:00</div> <div>Improv. variation1: gesturally "talk" to fixed media, begin and end at will between time markers, choose freely between distortion, chorusing, pitch shifting and granulation</div>	<div>09:00 to 10:00</div> <div>Improv. variation2: gesturally "talk" to fixed media, begin and end at will between time markers, choose freely between distortion, chorusing, pitch shifting and granulation</div>
variation - 1	variation - 2
Free dynamic gestures (< >) between "ppp" and "ff".	
Notes/comments	

Fixed media
sonogram



10:00-----11:00-----12:00

Theremin

10:10

Cue 6: Bass drum begins

Theremin fades out

Theremin silent

11:15

Cue 7: third high frequency cluster

Theremin improvises against fixed media sparsely, using timbre and effect type of choice

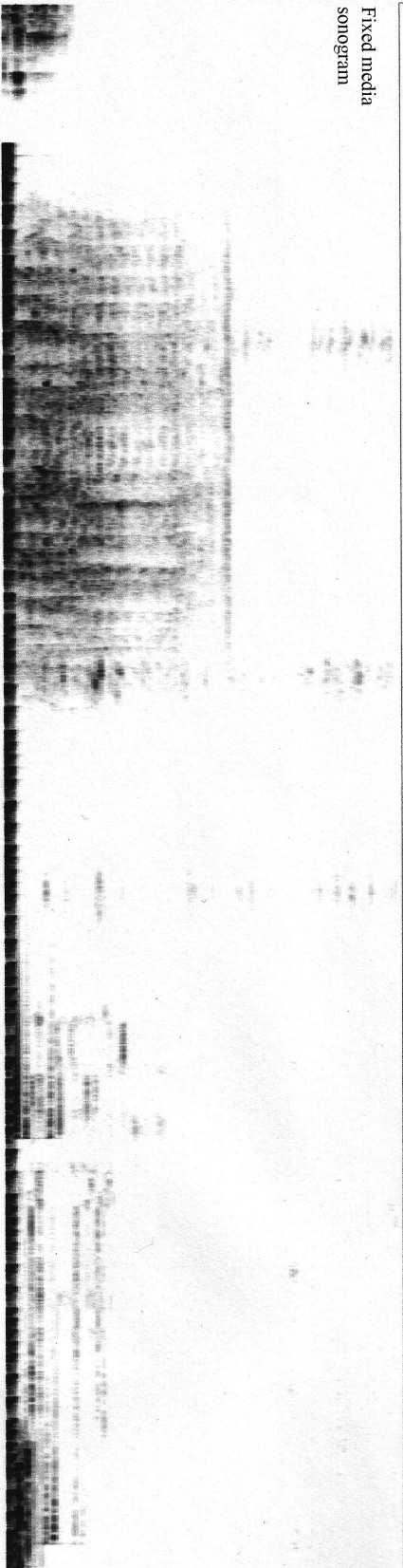
1. cluster

2. cluster

3. cluster

Notes/comments

Fixed media sonogram



12:00-----13:00-----14:00

Theremin


12:12

Cue 8: Pitched cluster

Theremin plays very sparse, open and spatial gestures

OR

sparse long tones with microglissandi



13:30

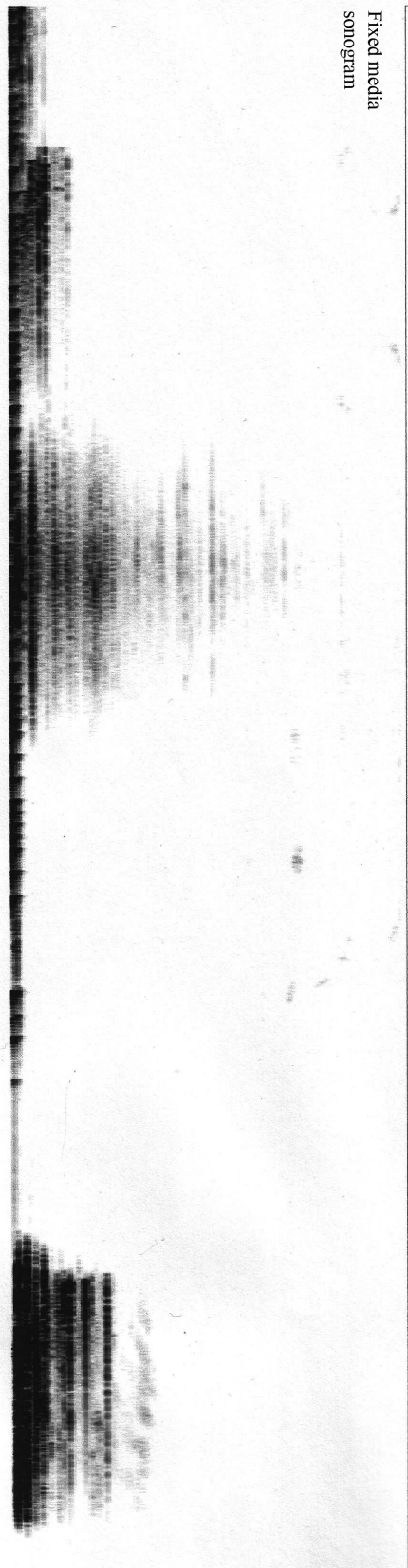
Cue 9: Final fixed media gesture, Theremin silent

Notes/comments

mp

silence

Fixed media sonogram



Appendix 3a: Clay Tablet score page 1

Jamie Fawcus

Tempo = 60

Clay Tablet for Balalaika Orchestra

2011

Page 1 of 5

seconds 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 1:00

+Percussion (cymbal) Crescendo + Diminuendo follows Balalaika Dynamics

prim domra
первая
домбра

alt domra
альтовая
домбра

bass domra
басовая
домбра

prim balalaika
первая
балалайка

sekund balalaika
вторая
балалайка

alt balalaika
альтовая
балалайка

contrabass
контрабасовая
балалайка

bajan
баян

gusli
гусли

Appendix 3b: Clay Tablet score page 2

Jamie Fawcus
Tempo = 60

Clay Tablet for Balalaika Orchestra
2011

Page 2 of 5

+Percussion (wood block) follows balalaika notation

seconds 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 2:00

prim domra
первая домбра
постукивать без определенного ритма по корпусу инструмента ногтями или плектрумом
Tap on the fingerboard of the instrument arhythmically with fingernails or plectrum
qn f qn f qn

alt domra
альтовая домбра
постукивать без определенного ритма по корпусу инструмента ногтями или плектрумом
Tap on the fingerboard of the instrument arhythmically with fingernails or plectrum
qn f qn f qn

bass domra
басовая домбра
ff

prim balalaika
первая балалайка
постукивать без определенного ритма по корпусу инструмента ногтями или плектрумом
Tap on the fingerboard of the instrument arhythmically with fingernails or plectrum
qn f qn f qn

sekund balalaika
вторая балалайка
постукивать без определенного ритма по корпусу инструмента ногтями или плектрумом
Tap on the fingerboard of the instrument arhythmically with fingernails or plectrum
qn f qn f qn

alt balalaika
альтовая балалайка
постукивать без определенного ритма по корпусу инструмента ногтями или плектрумом
Tap on the fingerboard of the instrument arhythmically with fingernails or plectrum
qn f qn f qn

contrabass
контрабасовая балалайка
ff

баян
баян
arhythmic clusters using lowest possible tone - Nizky + tremolo clusters
аритмические кластеры, самый низкий возможный тон
ppp f ppp ppp ff ppp ppp f

gusli
гусли

Appendix 3c: Clay Tablet score page 3

Jamie Fawcus

Tempo = 60

Clay Tablet for Balalaika Orchestra

2011

Page 3 of 5



seconds 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 3:00

prim domra
первая домбра

Pluck single strings arhythmically at random behind the bridge

Play flageolet arhythmically at random from series

pp *f* *pp* *f* *pp* *f* *pp* *f*

перебирать струны без определенного ритма за подставкой

играть одинарные флажолеты без определенного ритма по свободному выбору из серий

alt domra
альтовая домбра

Pluck single strings arhythmically at random behind the bridge

Play flageolet arhythmically at random from series

pp *f* *pp* *f* *pp* *f* *pp* *f*

перебирать струны без определенного ритма за подставкой

играть одинарные флажолеты без определенного ритма по свободному выбору из серий

bass domra
басовая домбра

ff

prim balalaika
первая балалайка

Pluck single strings arhythmically at random behind the bridge

Play flageolet arhythmically at random from series

pp *f* *pp* *f* *pp* *f* *pp* *f*

перебирать струны без определенного ритма за подставкой

играть одинарные флажолеты без определенного ритма по свободному выбору из серий

sekund balalaika
вторая балалайка

Pluck single strings arhythmically at random behind the bridge

Play flageolet arhythmically at random from series

pp *f* *pp* *f* *pp* *f* *pp* *f*

перебирать струны без определенного ритма за подставкой

играть одинарные флажолеты без определенного ритма по свободному выбору из серий

alt balalaika
альтовая балалайка

Pluck single strings arhythmically at random behind the bridge

Play flageolet arhythmically at random from series

pp *f* *pp* *f* *pp* *f* *pp* *f*

перебирать струны без определенного ритма за подставкой

играть одинарные флажолеты без определенного ритма по свободному выбору из серий

contrabass
контрабасовая балалайка

ff

+4 to 5 musicians vocalise bayan notation with "shhh" + "hissss" sounds

bayan
баян

Mechom Vozdush - "gusts of wind" from bellows, no discernable pitch

qn - f *qn - f* *qn - f*

имитация "порывы ветра" при помощи мехов, без определенной высоты тона

gusli
гусли

0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 3:00

Appendix 3d: Clay Tablet score page 4

Jamie Fawcus
Tempo = 60

Clay Tablet for Balalaika Orchestra
2011

Page 4 of 5

	seconds	0	4	8	12	16	20	24	28	32	36	40	44	48	52	56	4:00
prim domra первая домбра																	Draw plectrum along length of strings, first slowly, then as fast as possible <i>qn</i> <i>ff</i> провести плектрумом вдоль струны, сначала медленно, потом быстро как только возможно
alt domra альтовая домбра																	Draw plectrum along length of strings, first slowly, then as fast as possible <i>qn</i> <i>ff</i> провести плектрумом вдоль струны, сначала медленно, потом быстро как только возможно
bass domra басовая домбра																	
prim balalaika первая балалайка																	Draw plectrum along length of strings, first slowly, then as fast as possible <i>qn</i> <i>ff</i> провести плектрумом вдоль струны, сначала медленно, потом быстро как только возможно
sekund balalaika вторая балалайка																	Draw plectrum along length of strings, first slowly, then as fast as possible <i>qn</i> <i>ff</i> провести плектрумом вдоль струны, сначала медленно, потом быстро как только возможно
alt balalaika альтовая балалайка																	Draw plectrum along length of strings, first slowly, then as fast as possible <i>qn</i> <i>ff</i> провести плектрумом вдоль струны, сначала медленно, потом быстро как только возможно
contrabass контрабасовая балалайка																	Imitate and improvise around electronic sounds <i>mf</i> <i>mf</i> <i>mf</i> имитировать и импровизировать на тему басовых звуков
bajan баян																	Mechom Vozdush - "gusts of wind" from bellows, no discernable pitch <i>qn - f</i> <i>qn - f</i> <i>qn - f</i> <i>qn - f</i> <i>f</i> <i>qn</i> имитация "порывы ветра" при помощи мехов, без определенной высоты тона +Percussion (wood block) gestures diminuendo improvise random bass clusters <i>f</i> имитировать и импровизировать на тему басовых звуков
gusli гусли																	

Appendix 3e: Clay Tablet score page 5

Jamie Fawcus

Tempo = 60

Clay Tablet for Balalaika Orchestra

2011

Page 5 of 5

seconds 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 5:00

All instruments follow dynamics: $qn < \text{-----} ff$

prim domra
первая домбра

alt domra
альтовая домбра

bass domra
басовая домбра

prim balalaika
первая балалайка

sekund balalaika
вторая балалайка

alt balalaika
альтовая балалайка

contrabass
контрабасовая балалайка

bajan
баян

gusli
гусли

Gusli solo - sweeping gestures,
wind and rain

p mf f mp p qn

Гусли соло, широкий жест-ветер и дождь

+Percussion (cymbal) freely improvise following balalaika dynamics

+Gusli freely improvise following balalaika dynamics